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ABSTRACT

A docket search reviews selected educational telecommunications issues brought to the attention of the Federal Communications Commission (FCC). The docket search was part of an effort to develop a planning document for the establishment of a nationwide educational telecommunications system. Key policy-making proceedings were identified which dealt with educational television on UHF-TV, ITFS (Instructional Fixed Service Television), CATV (cable television), common carriers, and domestic satellites. For each docket a brief statement of the issue and a capsulized review of the position taken by each major participant in the proceedings is first presented; then a more detailed review describes the issues as seen by the FCC and the responses of the educational and other interests in a chronological order. Changes or modifications in position that occur are noted, and the rationale for each position are included, particularly as they relate to the positions of educational interests. The educational implications of the FCC decisions for each medium are summarized. (JY)

ED 060 396

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DOCKET SEARCH

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INTRODUCTION

The docket search is part of an effort to develop a planning document for the establishment of a nationwide educational telecommunications system. The study is being conducted under Contract OEC-71-3955(099) with the United States Office of Education, Department of Health, Education and Welfare.

The objective of the overall study is to provide USOE with a series of plans to be used as a basis for policy decisions in the establishment of a nationwide telecommunications capacity. These plans will suggest alternative policies and programs to achieve 100% coverage of the Nation's population by an educational telecommunications system. The ultimate goal is to suggest actions and policies to DHEW/OE in order to facilitate full coverage.

The purpose of this docket search, which constitutes the second part of an extensive literature search, has been to examine selected educational telecommunications issues brought to the attention of the Federal Communications Commission. Special attention has been given to those issues which will probably have the greatest impact on future educational communications. These major areas of concern were:

UHF-TV (ETV)

ITFS

Common Carriers

CATV

Domestic Satellites

Due to time limitations, it was agreed that the Contractor could not examine all dockets relating to these issues. However, every effort has been made to spotlight the key, policy-making proceedings, which were identified through the results of the literature search and through suggestions made by FCC staff members working in the above areas.

The discussion of each docket consists of two different summaries of the issues and positions contained in the docket. The first summary is a brief statement of the issue and a capsulized review of the positions taken by each major participant in the proceeding. The second summary consists of a detailed review of these issues and positions. The detailed review includes the issues as seen by the Commission and the responses of educational and other interests in a chronological order. Changes or modifications in positions that occur have been noted, and as much as possible, the rationale for each position has been supplied. Arguments used by the Commission in reaching any decision are included, particularly as they relate to the positions of educational interests. The effect of these decisions on potential educational services are cited.

Maximum attention has been given to the regulatory goals and arguments contained in submissions by educationally-oriented groups. Groups such as the National Association of Educational Broadcasters (NAEB), the Corporation for Public Broadcasting (CPB), the Joint Council on Educational Telecommunications (JCET), and the National Education Association (NEA) have played major roles in promoting and defending educational communications needs, and their contributions have been outlined in detail. The positions of several major non-educational participants, including AT&T, the National Association of Broadcasters (NAB), the Association of Maximum Service Telecasters (AMST) and the National Cable Television Association (NCTA) are included. Particular attention has been given to companies proposing to provide services to educational users. All comments submitted by the Department of Health, Education and Welfare and the Office of Education have been included, as have most other contributions by government agencies.

Since several of the issues examined are quite broad in scope, it has sometimes been necessary to restrict the discussion to only those portions of the proceeding having direct educational implications. Many of the dockets consist of thousands of pages of comments on a variety of related subjects which makes it impossible to include all issues and interests discussed. Therefore, in all cases, the proceeding has been simplified to reflect the needs and interests of the Office of Education and this project. Overall emphasis has been placed on the educational implications of the policies developed by the FCC.

THE DOCKET PROCEDURE

With the exception of Docket 16509, the dockets included in this search are rule making proceedings seeking the issuance, amendment or repeal of a rule or regulation. Rule making procedures may be initiated by the Commission or by petition from any interested person. Section 1.4 (Subpart C) of the Commission's Rules and Regulations govern the rule making process to insure fair, judicial treatment of all interests.

The dockets contain copies of all formal documents which make up the official records of the rule making and are open to public inspection. Comments, replies, legal briefs, technical studies, and reactions from the public are also filed in the docket in order of receipt by the Commission. With the exception of occasional confidential or proprietory information, the Commission and its staff bases its decisions solely on material contained in the docket.

The Commission opens a rule making proceeding by issuing a "Notice of Proposed Rule Making," which serves as formal Notification of the proposed rule when it is published in the Federal Register. Groups or individuals directly affected by a Notice must receive personal, legal Notification of any Commission action.

After the issuance of a Notice, the Commission must allow a reasonable amount of time for interested parties to comment. Parties must also be given a reasonable amount of time to reply to comments made by other participants.

The Commission may, at any time, issue a "Further Notice of Proposed Rule Making" to modify the original proposals. Adequate time must be allowed for comments and replies to the new proposals.

After considering relevant materials contained in the docket, the Commission will issue its decision in a "Report and Order," which includes a brief statement of the reasons for the decision reached. Additional decisions pertaining to a single rule making may be labeled as "Second Report and Order" and so on.

Commission decisions relating to procedural matters are contained in a "Memorandum Opinion and Order." Procedural issues of this type frequencly include requests for more time to file comments and requests for reconsideration of a decision.

Certain proceedings, such as the granting of licenses, require hearing procedures to be followed under provisions of the Administrative Procedures Act and Subparts A and B of the Rules and Regulations of the Commission. Under the hearing procedure, a hearing examiner conducts a court-like proceeding including witnesses and cross-examinations. The hearing examiner recommends a decision to the Commission which is free to accept it or reach its own decision based on the evidence.

Commission rules do not take effect until 30 days after their publication in the Federal Register. However, interested parties may request reconsideration and the Commission must act on such requests before new rules may take effect.

The Commission also may terminate a proceeding by rejecting all proposed rules or by transferring certain proposals to another proceeding.

Of course, all Commission actions are subject to judicial review by the Federal Courts.

UHF - TV

In the Matter of)

Fostering Expanded Use of UHF) Docket No. 14229
Television Channels)

Summary

The original proposed rulemaking would have required "disintermixture" or the exclusive assignment of all stations within a market to either VHF or UHF channels. Because of widespread public opposition to what would amount to a major change in the existing broadcast structure, several other proposals and potential UHF Tables of Assignments were offered. The Commission proposed a new class of low power, "Community Television" stations on Channels 70-83; but later allocation of those Channels to Land Mobile Services killed that suggestion.

Major Participants

NAEB: Major advocate for full use of all UHF Channels. Emphasizing the need for a maximum number of educational reservations. NAEB proposed, and defended a computer-generated, saturated UHF Table of Assignments.

JCEB: Supported need for more educational broadcast channels. While ITFS has great potential, it is not a substitute for the video audience impact of broadcast television.

Midwest Program on Airborne Televised Instruction at Purdue University: Operator of experimental, regional ITV airborne transmitter. MPATI defended its application for six (6) regional channels as an efficient way to deliver instructional programming.

Westinghouse: Supplied technical data supporting Airborne concept.

Georgia State Board of Education: Proposed multi-channel state educational/instructional broadcasting system. Several technical proposals were made to increase the number of permissible UHF stations.

Local Educational Broadcasting Groups and Smaller School Districts: Requested specific changes in FCC adopted Table of Assignments to meet local needs and plans.

Florida Board of Education

Maryland Board of Education

South Carolina Educational Broadcasters

WGBH Educational Foundation: Supported special treatment for ETV, including assignment to VHF band or lowest available UHF channel.

Commercial Broadcast Groups: Strongly opposed to disintermixture.

Association of Maximum Service Telecasters: Major spokesman for broadcasters. Preference was expressed for FCC unsaturated Table of Assignments because of increased flexibility.

Rural Television Viewers (Individuals and Farm Organizations): Opposed disintermixture because of belief that UHF signals are inferior to VHF.

In the Matter of)

Fostering Expanded Use of UHF) Docket No. 14229
Television Channels.)

As the VHF television band became increasingly crowded, broadcasters were forced to begin using the UHF television band. However, early UHF stations had a difficult time because of alleged technical and commercial inferiority in the UHF band. UHF stations found it difficult to compete with VHF stations in the same market.

Consequently, in an effort to equalize the competitive status of stations within a market, the Commission issued a Notice of Proposed Rulemaking on July 27, 1961 in Docket 14229.

The Proposed Rulemaking would require "disintermixture" or the exclusive assignment of all stations within a market to either UHF or VHF channels. Theoretically this would eliminate all differences between the bands and give all stations an equal chance. However, the proposal would require extensive changes in existing broadcast assignments.

With few exceptions, broadcasters and the public strongly opposed the disintermixture proposal. Many, particularly in rural areas, contended that changing to UHF would cause deterioration or termination of television services in some areas. Broadcasters felt that UHF could become competitive given time and technical advancement.

Various educational television (ETV) interests took the position that the future of UHF and ETV were closely related.

For example, educational authorities in both Georgia and South Carolina feared that changes would seriously upset the progress of ETV and threaten reserved channels. South Carolina was concerned about the fate of its existing VHF station. The National Association of Education Broadcasters, noting that the growing need for educational channels required expanded use of both VHF and UHF, suggested that more ETV reservations were necessary. Boston's ETV station, WGBH, suggested that if commercial stations were taken off VHF, noncommercial stations should be permitted to occupy VHF channels. Because of the vast number of educational reservations in the UHF band, its future was vital to ETV.

The Midwest Program on Airborne Televised Instruction (MPATI) at Purdue University noted the success of its experimental instructional television broadcasts. It encouraged the Commission to insure that similar activities could continue. 1/

In a Final Report and Order dated July 19, 1962, the Commission withdrew the disintermixture proposal because of lack of public support, but continued its efforts to resolve the UHF-TV problem. On March 27, 1963, it dealt with technical problems and considerations in a second Report and Order.

The Commission issued a Further Notice of Proposed Rulemaking on October 28, 1963, in which it rejected any elimination of the UHF Table of Assignments, but rather proposed a new Table of Assignments containing a greater number of stations. Partially based on an NAEB study of ETV needs the new Table of Assignments doubled the number of ETV reservations, in some cases reserving two ETV stations to a community. The Commission recommended that ETV stations operate on the lowest available channel to maximize

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1/ FCC Docket 15201 (not reported here due to unavailability) presents the proceedings related to the MPATI experiment.

their broadcast area. The FCC credited the NAEB study of assignments as a new approach to the frequency allocation problem. However the Commission's proposals differed from that of the NAEB in that fewer assignments were made then and more room was left for future assignments.

Some ETV applicants were immediately upset about the effect that changes in assignments had on their plans. Others felt that the FCC could not expect ITFS to replace ETV since ITFS was not broadcast and could not meet all local needs. NAEB requested time to conduct a new study to try to find even more ETV reservations.

There was some public support for additional ETV allocations. A number of individuals in the Baltimore area expressed a strong desire for two or more ETV channels to be assigned to their area. Several Educational Broadcasting Authorities submitted technical studies demonstrating their needs. For example, Westinghouse submitted a study conducted as part of the MPATI proceeding [1] supporting the airborne approach to ITV as most effective in terms of cost and coverage. Other reports concentrated on the need for local coverage of local issues, with most comments indicating the absolute need for local ETV to meet local programming needs.

The Joint Council on Educational Broadcasting (now the Joint Council on Educational Telecommunications) supported the NAEB proposals, especially the multiple reservations for ETV concept. JCEB emphasized that ITFS was designed to supplement rather than replace ETV and the Commission should not place primary reliance on ITFS to meet educational needs.

In defending its own assignment plan as being the best for ETV coverage, NAEB asserted that it would give control of ETV facilities to as many communities as possible.

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[1] Docket 15201, ibid.

However, the Association of Maximum Service Telecasters (AMST) questioned that the NAEB plan was best for ETV. AMST supported the less saturated FCC plan partially on the basis of the FCC's technical data and partly because the NAEB's plan failed to serve certain state plans adequately.

The NAEB plan was also opposed by the ABC network and other affected broadcast interests.

MPATI submitted a joint filing in Dockets 14229 and 15201 requesting six regional channels to be used by airborne transmitters to supply multi-channel instructional television service. Supported by technical and economic data, MPATI stated that in fact the airborne concept made maximum utilization of a minimal number of channels. MPATI contended that receiver problems made the 2500 MHz band infeasible for airborne television instruction. It further noted that its proposal could be coordinated with that of the NAEB in such a way that both proposals would be acceptable.

The Commission's Fourth Report and Order of June 4, 1965 denied the MPATI proposals for UHF channels because of a limited amount of channel space. The FCC felt that assignment of six channels to MPATI (and other channels to other airborne organizations) would make those channels virtually unusable anywhere else in the country because of serious interference problems. The Commission was impressed with NAEB's computerized approach to frequency assignment and it adopted some, but not all, of NAEB's proposals. The FCC allocation differed from that suggested in the NAEB study in that it was not as saturated so as to provide for unforseen future growth.

The Commission considered its Table to be a "framework" to which other assignments could be added as needs became apparent. The FCC Table of Assignments also set a maximum assignment of two reserved educational stations to a specific city. The Commission noted that this would not prevent a non-commercial organization from applying for an unreserved license as had already been done in several cities.

On June 14, 1965, the Commission adopted a Further Notice of Proposed Rulemaking reviving a suggestion made in the Third Report and Order of July 8, 1964. The Commission proposed a class of low-powered television stations for small and medium sized communities (Community Television). These stations would be allocated to Channels 70 through 83 and strictly limited as to power and antenna height (10KW at 300 feet). Their transmitters could not be located within 25 miles of a city with a television allocation or within ten miles of an urbanized area. There would be no assignment plan, but the impact on existing stations would be limited. Finally, each community would be limited to no more than one commercial and one non-commercial low-powered station.

NAEB, however, filed for a reconsideration of the Fourth Report and Order stating that the Table of Assignments and the Community Television proposal could not be separated. NAEB's primary objection was that non-reserved channels were unlikely to be assigned to educational television, even on the community-type channels. NAEB contended that the new, non-saturated FCC plan and the elimination of Channels 70-83 from the general Table of Assignments constituted a policy change requiring further public discussion of the interrelationships between the two decisions. It further contended that its saturated Table was better because it provided for a larger number of assignments, and more importantly for a larger number of reserved assignments. NAEB continued to note that ITFS was limited because it could not be used for non-broadcast, out-of-school purposes.

JCEB stated that the new Table of Assignments did not give education its fair share of channels, noting that most areas would be served by only one educational channel where several were needed. It felt that the failure to adopt a saturated Table would result in the inability of educational stations to get started because of the extra effort required to obtain an unassigned and unreserved channel. Criticizing the Commission's limitation of two educational channels as a maximum to a community, JCEB considered the Community Television proposal "a low-power limbo...to accommodate the massive needs" of educational television.

The Georgia State Board of Education complained that the assignment of only one educational television channel to an area was unfair considering the number of commercial channels assigned to almost all areas. The Georgia Board asserted that community-type stations could not meet the needs of small communities because of a limited service area. (ITFS was considered to be insufficient because of its coverage limitations.) The Georgia Board made several technical suggestions which would relax the rules slightly to permit less separation between stations on the same channel.

Other criticisms of the low-power proposal were received from TV Translator organizations who were currently using Channels 70-83 to rebroadcast distant television signals. Their views were supported by AMST. MPATI noted that the low-power proposal would cause interference problems during the final five-year period the FCC had permitted them to operate.

NAB filed a very brief statement in support of the low-power proposal, and some support was voiced from community groups. Many of these latter groups indicated their willingness to establish and operate community type stations if they were approved.

During this period, numerous applications requested specific changes in the Table of Assignments to meet the needs of various commercial and non-commercial groups. Many of these applications were prompted by a Commission announcement that a computer programming error would require a new Table of Allocations to be developed.

On February 9, 1966, the Commission adopted a Fifth Report and Memorandum Opinion and Order that made some revisions in the previously announced Table of Assignments. As much as possible, the Commission tried to accommodate the specific requests that had been made. It rejected the NAEB's contention that the previous, but similar Table of Assignments had violated the Commission's own rules by not being saturated. The Commission noted that its plan was a framework to provide for future population growth or other needs that could not now be foreseen, and it reaffirmed the need for continued flexibility that a saturated table would rule out. The Commission further noted that it had substantially increased the number of educational reservations over the original 1952 Table of Assignments. The Commission indicated that it preferred to make a rapid definite decision, subject to later modification, rather that to spend more time on administrative proceedings as NAEB had urged.

The Commission also rejected the suggestionsof JCEB and the Georgia Board, finding the latter's technical suggestions unacceptable because of uncertain interference protection. The Commission commented that it would not accept any technical modification that carried any risk of interference. It denied that its Assignments were unfair or insufficient and noted again that educational stations could, and did, operate on unreserved, "commercial" assignments, and that commercial stations were required to present some programming of a cultural and public service nature similar to that carried by educational stations. The FCC observed that NAEB's "needs" included classroom instruction channels, which the Commission preferred to be carried on ITFS. Despite educational objections; the Commission believed that ITFS could adequately handle many of the required educational services freeing ETV for general audience non-closed circuit programming. The Commission emphasized that it would be impossible to give a channel to everyone who wanted one, and that the Table of Assignments and the limitations of two reserved channels to a city tried to share the limited channels as best as possible. The Commission also noted that it had not reached a decision on what to do with Channels 70-83, and that many of these might be used in educational applications.

JCEB quickly took exception to the Commission's assumption that ITV was closed circuit in nature and did not require broadcast facilities. It urged that the Commission reconsider its Fifth Report and Order.

A very similar position was taken by NAEB which asserted that the FCC position was contrary to the goals of the Communications Act. NAEB stated that ITFS was not a broadcast substitute. Citing Section 307(b) of the Communications Act, NAEB commented that the Commission had an obligation to develop a saturated Table of Assignments to include many small (under 25,000 population) communities which the Commission had deliberately excluded. NAEB contended that the unsaturated table conflicted with the Educational Broadcasting Facilities Act and the All-Channel Receiver Act, and tended to inhibit long-range educational planning. Expressing the opinion that education is one of the Nation's most important priorities, NAEB stated that "any allocation scheme which limits the number of assignments and reservations and establishes an alleged resevoir of unassigned, unreserved channels deprives the educational community of its fair share of the spectrum space. Educators cannot compete successfully with commercial applicants for spectrum space."

In response, the Commission issued a Memorandum Opinion and Order, July 6, 1966, stating that NAEB's "needs" were based on a long-obsolete study. The Commission insisted that NAEB's plan was too inflexible and that broadcasting bands should be used for the general public, not special interests.

Interest in the community stations continued for a while. Groups such as the Translator Organizations and AMST argued for translator use of 70-83. ABC opposed exclusive use of any group broadcast channels by a specific service.

NAEB continued to call for full power, saturated use of all UHF channels. It contended that use of Channels 70-83 would help to supply some of the "essential" educational channels denied by an unsaturated framework. The community station concept, according to NAEB, was not applicable to ETV objectives. JCET supported NAEB's position fully.

The Georgia State Board of Education suggested that Channels 70-75 be used for the community stations, and Channels 76-83 be reserved for non-commercial ETV coverage on a statewide basis to supplement the Commission's goal of providing every community with at least an educational signal from within the state.

The Commission had also been dealing with specific channel assignment requests during the time. However, as a result of a decision in Dockets 18261 and 18262 relating to sharing of the UHF band with land mobile services,[1] the Commission issued an Eighth Report and Order on January 27, 1971. The community-type station proposal was moot because of a reassignment of Channels 70-83 to the land mobile services. The Commission indicated that there had been relatively little interest in the low power station concept and that Channels 14-69 could provide sufficient television service by emphasizing high power stations. Translator service would also be moved to channels below 69.

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[1] Dockets 18261 and 18262 are described in the subsequent section.

In the Matter of)

Shared Use of Television) Docket No. 18261
Channels 14 and 15 by the)
Land Mobile Radio Service)

An Inquiry Relative to the) Docket No. 18262
Future Use of the Frequency)
Band 806-960 MHz; and Amend-)
ment of Parts 2, 18, 21, 73, 74,)
89, 91 and 93 of the Rules)
Relative to Operations in the)
Land Mobile Service Between)
806 and 960 MHz.)

Summary

The first proposal (18261) would allow use of UHF Channels 14-20 by Land Mobile services without interfering with any existing or proposed television assignments. The second, and more significant, proposal (18262) would reassign UHF Channels 70-83 to Land Mobile use exclusively. The channels would be used to provide numerous Land Mobile services, such as mobile telephone, common carrier, police, fire and business communications.

Major Participants

National Association of Manufacturers: Original proponent of UHF Land Mobile sharing. Channels unusable for television can be used for Land Mobile transmissions without interference to existing television services.

Association of Maximum Service Telecasters: Major broadcast opponent of any Land Mobile use of UHF. Questioning need of

UHF Channels by Land Mobile, AMST defended full use of UHF Channels by television broadcasters.

Broadcaster Groups: Following AMST's opposition, many individual broadcasters and broadcaster organizations opposed proposals.

ABC
All Channel Television Society
CBS
National Association of Broadcasters
NBC

NAEB: Opposed to any non-broadcast use of UHF. As noted in Docket 14229, full use of UHF by television broadcast is necessary to guarantee an adequate number of educational channels.

JCET: Less opposed to Channel 14-20 sharing if non-interference is guaranteed. Channels 70-83 will be needed to meet future educational needs.

CPB: Opposed to any plan which caused interference. Protection of ETV through a maximum reservation policy is necessary.

Local ETV Operators: Opposed to proposals due to adverse effects on existing or planned stations.

Georgia State Board of Education
Joaquin Sierra ETV Association
State of New Jersey-Public Broadcasting Authority
Rochester Area ETV Association, Inc.

National TV Translator Association: Preferred continued exclusive use of Channels 70-83 by television translators.

Land Mobile Communications Council: Organization composed of many industrial, municipal and public safety users of Land Mobile services. Strongly supported additional channels for

Land Mobile use.

Aeronautical Radio, Inc.
American Automobile Association
American Petroleum Institute
American Trucking Association
National Association of Business and Educational Radio, Inc.
National Association of Radiotelephone Systems (NARS)
National Committee for Utilities Radio
Utilities Telecommunications Council

City of Dallas, Texas: Supported increased channel allocation for Land Mobile use.

The Small Business Administration: Supported the needs for Land Mobile users as being more important than those of television broadcasters.

Land Mobile Communications Section/Industrial Electronics Division, Electronics Industries Association: Supported need for increased Land Mobile channels.

Equipment Manufacturers: Supported feasibility of sharing and need for additional Land Mobile channels.

General Electric
Motorola
Raytheon
General Electric

AT&T: Requested that use of new channels be restricted to Common Carrier operators, not private users.

United States Independent Telephone Association: Supported Common Carrier-only use of additional Land Mobile channels.

In the Matter of)

Shared Use of Television) Docket No. 18261
Channels 14 and 15 by the)
Land Mobile Radio Service.)

An Inquiry Relative to the) Docket No. 18262
Future Use of the Frequency)
Band 806-960 MHz; and Amendment)
ment of Parts 2, 18, 21, 73, 74,)
89, 91 and 93 of the Rules)
Relative to Operations in the)
Land Mobile Service Between)
806 and 960 MHz.)

Because of severe crowding in several areas of the frequency spectrum, the Commission has been forced to make modifications to various assignments in order to accommodate additional services. Land Mobile (two-way mobile telephone type transmission) is one of the services which rapidly outgrew the frequency space assigned to it. Because Land Mobile services use frequencies both immmdiately below and immediately above the UHF television bands, a logical source of additional frequencies would be unused portions of the spectrum assigned to television.

Based on a 1964 National Association of Manufacturers Communications Committee proposal, the Commission, in a Notice of Inquiry and Proposed Rulemaking dated July 17, 1968, opened two separate but integrally related proceedings to investigate possible use of frequencies assigned to UHF television by Land Mobile Services.

The first proposal (18261) which had actually been opened with little interest in 1964, would allow use of UHF Channels 14-20 by Land Mobile services without interfering with any existing or proposed television assignments. This use would be restricted to two channels in each of the top 25 television markets. The second, and more significant proposal (18262) would reassign UHF Channels 70-83 to Land Mobile use exclusively. The channels would be used to provide numerous Land Mobile services, such as mobile telephone, common carrier, police, fire, and business communications.

The strongest opposition to this proposal came from broadcasting groups and individual stations, while strongest support came from Land Mobile users, including several local governments and manufacturers.

The National Association of Educational Broadcasters, commenting on both Dockets 18261 and 18262, observed that the proposals constituted a threat to as yet unused educational reservations. NAEB tied the Docket 18262 proposal to issues not yet resolved in Docket 14229 (described previously in this docket search) and indicated a desire to see the earlier question settled before the Commission deleted some UHF channels from television service. NAEB based its general opposition to the proposals on the belief that it gave relief to Land Mobile users at the expense of educational needs. In comments relating specifically to Docket 18261, NAEB said that there should be assurances that Land Mobile operations would not interfere with any existing systems operating on channels both below and above Channel 20. NAEB recognized that the proposal was an emergency type of approach, but suggested that it might be a bad patchwork solution.

Docket 18262 was considered by NAEB to be much more serious, since it felt that if the proposal were accepted, any chance of additional educational television services suggested in Docket 14229 would be eliminated. Using arguments similar to those advanced in that Docket, NAEB charged that UHF would not be underutilized if the Commission had adopted a saturated Table of

Assignments using all channels, including Channels 70-83 which had never been assigned. NAEB stated that the proposal violated the spirit of the All-Channel Receiver Act of 1962 in which Congress had called for the full development of the UHF band. NAEB submitted detailed technical data that suggested that the proposals would result in serious interference problems.

The Corporation for Public Broadcasting noted that public television was more reliant upon UHF and its full utilization than were commercial stations. CPB indicated that sharing should be permitted only where no interference could possibly occur, and that existing and future ETV stations should be given the fullest possible protection, including channel reservations.

JCET's comments stated that while the 18261 proposal would be a "lesser evil," there was some question of the need for additional channels for Land Mobile operations. It stated that any interference problems should be resolved to guarantee maximum protection of broadcasting facilities. It also expressed opposition to the loss of Channels 70-83, stating that these channels would be needed for ITV as general public audience oriented programming on ETV stations became more dominant. Eventually instructional television would be forced to find new channels, and if the proposal in Docket 18262 were adopted, none would be available. JCET also suggested that spare channels might be necessary later for new services.

Motorola, one of the major Land Mobile equipment manufacturers, proposed that any adversely affected stations on Channels 14-20 could be relocated between Channels 21-69. Motorola also suggested that the impact on educational television would be minimal.

The chief broadcasting opponent of the proposals was the Association of Maximum Service Telecasters (AMST) which opposed any non-television broadcast use of channels intended for broadcasting.

AMST had several studies prepared to demonstrate the value of broadcast television as opposed to private Land Mobile use.

NAEB agreed with AMST that much of the problem centered around poor management of the existing Land Moble frequencies and contended that the granting of additional Land Mobile channels was still premature. NAEB mentioned that the alternative programming provided by ETV relied very heavily on the use of UHF and that ETV required more protection and special treatment than commercial broadcasting. Along with AMST, CPB, the National Association of Broadcasters, and the three commercial networks, NAEB questioned the feasibility of channel sharing without interference. NAEB asserted that if those channels had been available to broadcasters, they would have been used, and that the Land Mobile forces had not made an adequate justification for using them.

The Georgia State Board of Education commented that some of its existing ETV stations, as well as planned stations, would be affected. The Georgia Board stated that the channel conversion cost for existing stations that would be necessary could be extremely high.

NAEB and JCET jointly submitted a listing of the current and future status of UHF-ETV stations. The list paid particular attention to the rapid growth rate of public broadcasting and the large number of areas without public television service as yet.

The Commission's First Report of Order and Second Notice of Inquiry of May 20, 1970, noted that Land Mobile needs will increase. While it felt that all possible solutions are undesirable to some degree, the Commission decided that both the Channel 14-20 sharing and the exclusive use of Channels 70-83 by Land Mobile proposals should be adopted. The Commission stated that Channels 14-69 would be sufficient to meet educational needs with the aid of ITFS and CATV. The Commission also noted that while it was terminating

Docket 14229, it was encouraging strengthened use of ITFS through the proceedings in Docket 14744.

NAEB requested a reconsideration of the decision, asserting that the protections proposed to permit sharing of Channels 14-20 were inadequate, and that this "temporary" solution did not appear to be temporary enough. In its opposition to the deletion of the upper UHF channels, NAEB objected to exclusion of non-commercial interest without a guarantee of access to other spectrum resources. Questioning the adequacy of the remaining assignments, NAEB suggested no reassignments be made until other channels (ITFS and CATV) could be guaranteed to educational interests. Thus, NAEB requested a postponement of this decision until the issues in Dockets 14744 (ITFS) and 18397 (CATV) could be settled.

Many other broadcast interests requested reconsideration or a stay for a variety of reasons. For example, the Department of Justice opposed the policy of granting the allocation to the Land Mobile services before the technology exists to use it.

A Memorandum Opinion and Order dated September 15, 1970 rejected NAEB's arguments. The Commission recognized legitimate educational needs, but noted that it could not hold up all policy decisions for them. Commissioner H. Rex Lee issued a concurring statement, noting that he was now satisfied that educational interests were being met. A decision on Petitions for Reconsideration involving technical problems was postponed to allow detailed technical studies. The Commission also delayed any decision concerning procedural issues related to the new use of the frequency space.

Educational Implications

Docket 14229

Educational interests felt that the full use of UHF frequencies was required to meet their projected television needs. They feared that any plan for UHF that did not immediately reserve the maximum number of channels would result in insufficient educational channels for future needs.

The original "disintermixture" proposal would have eliminated any real or imagined difference between VHF and UHF. The more realistic discussion of the "Table of Allocations" concentrated on the way in which the channels would be assigned to educational and commercial interests.

Educational groups cited various studies and reports noting the need for multi-channel educational and instructional television services. They emphasized the need for full use of all available UHF frequencies with special preference given to educational channels. A repeated point was that only UHF could provide necessary broadcast (as opposed to closed circuit or narrowcast) television service to meet out-of-school needs.

As a result of the FCC ruling on Dockets 18261 and 18262, the number of available channels for television broadcasting (and thus for educational uses) was decreased. In closing this proceeding (Docket 14229), the Commission noted its intention to allow flexibility in the future use of the remaining channels by keeping many of them unassigned but not reserved, a position that the educational groups opposed because they feared non-educational interests might receive a larger proportion of the remaining channels.

Docket 18261 and 18262

An affirmative action on this docket would (1) reallocate portions of the UHF television band to commercial and government Land Mobile Service(of little educational use) and (2) would result in a decreased number of television channels available for educational television.

Educational interests expressed serious concern about the effect that sharing of UHF by television and Land Mobile Service would have on existing television broadcasting stations. Educational groups felt that the reallocation of the upper UHF channels to Land Mobile Service would seriously impinge on low power "translators" designed to increase the coverage of stations operating on other frequencies.

The FCC decision in favor of the Land Mobile Service implied confidence that non-broadcast television services, such as ITFS, could adequately meet the future television needs of education. That view, however, was not concurred in by the educational interests who maintained that many channels of educational programming were needed and that neither ITFS nor broadcast television alone could meet the predicted need.

INSTRUCTIONAL TELEVISION

FIXED SERVICE

In the Matter of	)	
Amendment of Parts 2 and 74	)	Docket No. 14744
of the Commission's Rules and	)	
Regulations to Establish a	)	
New Class of Educational	)	
Television Service for the	)	
Transmission of Instructional	)	
and Cultural Material to	)	
Multiple Receiving Locations	)	
on Channels in the 2500-2690	)	
MHz Frequency Band. Amendment	)	
of Parts 81, 87, 89, 91 and 93.	)	

Summary

The status of Instructional Television Fixed Service (ITFS), operating on the 2500 MHz band, is contained in two essentially separate proceedings under Docket No. 14744. The first proceeding established the ITFS, and the second proceeding evaluated its progress and modified its operating channels.

Major Participants

Part I

Department of HEW: Supported individualized ITFS concept suggested by this proposal. ITFS would permit maximum experimentation with instructional television techniques.

Plainedge, L. I. School System: Tested local ITV concept. Success of the Plainedge experiment led to ITFS proposal.

Midwest Program on Airborne Televised Instruction: Operator of regional ITV experiment. MPATI emphasized the need for a local ITV, which airborne systems could not provide, to meet local educational needs.

NAEB: Emphasized that ITFS should supplement, not replace, broadcast instructional television. ITFS would allow local ITV in-school needs, but it could not meet all educational needs.

Many Local and State School Systems: Supported ITFS as broadcast supplement. Both broadcast and narrowcast services are needed.

National Education Association: Supported full use of both proposed bands for education.

JCEB: Supported full use of both proposed bands for education.

NET: Suggested limited, non-interfering use of 1990 MHz band until 2500 MHz equipment could be made available.

Central Committee on Communications Facilities of the American Petroleum Institute: Prime user of 2500 MHz Operational Fixed Service. This group strongly opposed any action which would limit industrial use of the band.

City of Los Angeles Power and Water Department: User of Operational Fixed Service, opposed to educational use of 2500 MHz band forcing it to change its services.

Canadian Department of Transportation: Responsible for Canadian communication management. Preferred assignment of 2500 MHz to ITFS because several Canadian services would be adversely affected by ITFS operation in the 1990 MHz band.

Commercial Broadcast Groups: Opposed ITFS use of 1990 MHz band because of large number of broadcaster-owned microwave STL links in operation on that band.

Part II

Department of HEW (Al Horley): Preferred delay of decision until Satellite use of 2500 MHz issue could be settled. Public service use of top three channels would be better than complete loss.

NAEB: Viewed proceeding as threat to continuance of ITFS and served as clearinghouse for comments from many local ITFS operators and school systems. NAEB emphasized that all 31 channels were necessary to meet future, growing educational needs.

NEA: Opposed any action on ITFS until Satellite frequency decision is made to insure coordination between terrestrial and space educational services.

Corporation for Public Broadcasting: Suggested allocation of top three channels to public safety groups if educators must give up three channels. CPB preferred that all 31 channels be allocated to education.

JCET: Opposed ITFS action prior to Satellite frequency decision. While not opposing Police and Public Safety Use of top three channels, JCET preferred that they coordinate their needs through educational institutions.

The Educational Television Association of Metropolitan Cleveland: Operator of Cleveland ITFS Consortium's multi-channel group system. Success of ITFS was noted by many Cleveland area schools associated with Consortium who commented in support of ITFS.

The Association for Graduate Education and Research of North Texas (TAGER): Major regional instructional television group; switching from microwave to ITFS. TAGER emphasized that the primary and exclusive function of the ITFS frequencies should be educational with 28 channels as an absolute minimum.

Numerous Local and State School Systems: Support expressed for local ITV. Many local systems cited funding and organizational problems delaying the implementation of ITFS plans.

American Petroleum Institute: Shared use of a few channels will meet needs. Most uses are for remote areas and should not affect educational ITFS.

Public Safety Groups: Supported the use of some ITFS channels for in-service training of police and fire personnel.

In the Matter of)

Amendment of Parts 2 and 74) Docket No. 14744
of the Commission's Rules and)
Regulations to Establish a)
New Class of Educational)
Television Service for the)
Transmission of Instructional)
and Cultural Material to)
Multiple Receiving Locations)
on Channels in the 2500-2690)
MHz Frequency Band. Amendment)
of Parts 81, 87, 89, 91 and 93.)

ITFS originated in 1962 with a Notice of Proposed Rulemaking which suggested multi-channel educational television systems on either, or both, of two lightly used bands, 1990-2110 and 2500-2690 MHz. The ITFS concept was based on an experiment conducted by a school system in Plainedge, L.I., and other educational television projects such as the Midwest Program on Airborne Televised Instruction. This new Service was viewed as a vehicle for local instructional television.

The supporters of ITFS emphasized its usefulness as a supplement to broadcast educational television. Both the National Association of Educational Broadcasters and the Department of HEW maintained the view that ITFS would permit school systems to develop individual ITV programs, a somewhat difficult task with ETV broadcast systems.

Many school districts and ETV authorities strongly supported the proposal. The National Educational TV and Radio Center (NET) and the Joint Council on Educational Broadcasting were among the major proponents.

The choice between the two bands considered for use by ITFS (1990-2110 MHz and 2500-2690MHz), brought about strong disagreements. While some educational interest, notably JCEB and the National Education Association, urged that both bands be assigned to ITFS, the realities of the crowded frequency spectrum seemed to suggest that a choice must be made.

The 1990-2110 MHz band had a key advantage in that equipment designed for use on those frequencies was readily available. In addition, the results of engineering studies suggested that the 1990-2110 band would be preferable. However, strong opposition came from broadcasting interests, who had been assigned the band for use by studio-to-transmitter microwave links, and from the Canadian government which feared interference with several important services.

On the other hand, the 2500-2690 MHz band was being used at that time by very few Operational Fixed Service stations, mostly located on the West Coast. Oil companies and public utilities currently using the band fought to keep it on an exclusive basis. A primary disadvantage of the 2500-2690 MHz band was that no suitable operating equipment was available. However, a number of manufacturing companies filed statements announcing their intentions to develop and market 2500 MHz transmitters and reception converters.

Consequently, in a Report and Order dated July 25, 1963, the Commission announced that ITFS would be assigned to the 2500-2690 MHz band, and would share it with the existing Operational Fixed Service stations. Thirty-one channels assigned to applicants in groups of four were made available for ITV use.

The 2500-2690 MHz band was selected in part because it provided for more channels and greater flexibility. The Commission expressed confidence in the manufacturers' ability to produce the equipment to be made available for use for the assigned band. Furthermore, several limitations were placed on the new ITFS.

Channels were to be used primarily for instructional purposes, although off-hours could be used for administratively-oriented programs. The service was also restricted from acting as part of a statewide television relay system, yet small, local or regional relays between systems were permitted. Finally, the Commission limited the service to standard 6 MHz television channels rather than the flexible bandwidth, high-resolution channels that some potential users had requested. The Commission rejected an appeal from the petroleum and utility users of the band, noting that educational needs had been demonstrated.

A Further Notice of Proposed Rulemaking was issued by the Commission on June 17, 1970. In order to end the controversies over sharing the 2500-2690 MHz band, it was proposed that ITFS be given exclusive use of twenty-eight channels and the remaining three channels be given to the Operational Fixed Service.

The Commission observed that ITFS was not being utilized as fully as had originally been anticipated, but emphasized that no changes would be allowed to affect existing stations.

Approximately 150 comments were received by the Commission. Many were from local school districts or universities who had developed plans for ITFS utilization, but due to the difficulties encountered in obtaining sufficient funding for the construction of a system, progress was necessarily slow. Some potential ITFS operators observed that DHEW/OE assistance similar to that accorded ETV would be needed.

Many comments were channeled through NAEB, which considered the proceeding a possible threat to the continued existence of ITFS. NAEB was particularly unhappy about the proposed cutback from 31 to 28 channels. This same position was held by a number of other petitioners. Organizations such as the Corporation for Public Broadcasting preferred 31 channels, but would accept 28 as an absolute minimum.

Docket 14744

Little opposition to a minimum of 28 channels for ITFS was expressed. The Operational Fixed Service users merely wanted exclusive use of the three channels.

The HEW position was similar, but it also favored permitting public service users, such as Police and Fire Departments, to use the three channels that would be dropped. This proposal originated with the Corporation for Public Broadcasting, and received some support from educational interests.

In its Second Report and Order adopted June 8, 1971, the Commission assigned 28 channels exclusively to ITFS as it had proposed. Three two-way channels were assigned to be shared by Public Safety Services as the primary users, and the Operational Fixed Services as a secondary user.

In effect, the Commission recognized the causes for the lag in developing ITFS and reaffirmed its support for ITFS as a major tool for educational programming.

NEA and JCET referenced this proceeding to their proposal to allocate the 2500 MHz band for educational satellite uses in Docket 18294.

In the Matter of)
Amendment of Part 74, Subpart) Docket No. 18940
I of the Commission's Rules)
and Regulations Governing)
Instructional Television Fixed)
Stations to Provide for the)
Operation of Low Power Relay)
Stations (Translators or)
Boosters).

Summary

Based on a suggestion by an equipment manufacturer, this proceeding explored the operation of low power ITFS rebroadcast transmitters to extend ITFS coverage.

Major Participants

Jerrold Electronics: Proposed low power rebroadcast. As a major manufacturer of ITFS equipment, Jerrold suggested that transmitters requiring limited electronic signal control could be made available at low cost.

Micro-Link Varian Associates: Also manufactures ITFS equipment. Different transmitter techniques than those proposed by Jerrold were suggested.

NAEB: Recognized need for increased ITFS coverage, but questioned rebroadcast approach as best solution.

JCET: Supported proposal because of greater flexibility.

ITFS: Operating Systems and School Districts: Indicated a need for rebroadcast to reach previously inaccessible school locations.

In the Matter of)
Amendment of Part 74, Subpart) Docket No. 18940
I of the Commission's Rules)
and Regulations Governing)
Instructional Television Fixed)
Stations to Provide for the)
Operations of Low Power Relay)
Stations (Translators or)
Boosters).)

Proceedings under Docket 18940 were instituted at the request of Jerrold Electronics to permit "the installation and operation of low power, linear amplifier, repeaters without the need for automatic shut-down or automatic gain control, etc., for the purpose of providing Instructional Television Fixed Service signal coverage to qualified educational receivers otherwise shadowed or blocked from normal reception by natural or man-made obstructions." The proposal would permit ITFS operators to extend their coverage for a minimal cost and with minimal technical problems by using a very low power booster (using the same frequency) or translator (using different frequencies) rebroadcast transmitters. A proposal was also received from Micro-Link Varian Associates to achieve the same goal using slightly different transmitter techniques.

The Commission opened these proposals up to discussion with a Notice of Proposed Rulemaking on August 5, 1970. The only issue of concern to the Commission was the lack of an automatic shut-off on the transmitter when none of the channels were in use.

NAEB filed a technical statement commenting on various technical aspects of the proposal. While noting that there was a real need for such a service, NAEB questioned whether or not these proposals were the best solution.

JCET supported the proposal since it allowed for greater flexibility. Similar support came from various ITFS operating systems and school authorities.

The Commission issued a Report and Order on May 5, 1971, to allow the new service. Limited to 50 milliwatts per channel, but permitting some absence of automatic gain control, the transmitter would have to shut-down automatically when the last of the four main ITFS channels left the air. The Commission instituted a highly simplified application procedure to handle the new service.

Educational Implications

Docket 14744

Although ITFS has wide support in the educational community, it is essentially closed circuit TV since its the low power broadcasts can only be received by schools or receivers equipped with special antennae and convertors. The capital costs of establishing an ITFS system are also very high so that its development has been slow. Consequently, for educational purposes ITFS is a welcome but supplemental addition to broadcast instructional television.

The two proceedings in this docket established and later modified a band of television channels for exclusive use by educational institutions to distribute instructional programming. The FCC has noted in several decisions that it considers the Instructional Television Fixed Service 2500 MHZ band to be the primary medium of instructional program transmission.

For several years after the establishment, ITFS received little use. The FCC then reevaluated it when other requests were made for use of the ITFS frequencies. The Commission reaffirmed its support for ITFS but reduced the number of channels from 31 to 28, with the other remaining three channels going to public safety groups (police and fire departments primarily) for in-service training purposes. The Commission, however, did not approve some requested changes in technical standards that would have permitted experimentation by schools with high resolution television or two-way broadcasts.

Although satisfied with the 28-channel allocation, educational groups in general reaffirmed their belief that the Commission was not reserving sufficient channels for educational purposes.

Docket 18940

The adoption of new rules under the proceedings under this docket increased the usefulness of ITFS, particularly in remote or highly urbanized areas. Equipment costs will be kept relatively low through a highly simplified application of low-power boosters or translator rebroadcast transmitters. The effect of these modifications was recognized and supported, in general, by educational interests.

COMMON CARRIERS

VIII. COMMON CARRIER

A. DESCRIPTION

Communications common carriers transmit of communications signals and provide fixed rate services for "public hire" on a regulated basis. Interstate rates and terms of service, known as tariffs, are filed with and regulated by the Federal Communications Commission. Intrastate rates and local services are regulated by State Public Utilities Commissions (except in Texas where local authorities exercise regulatory authority).

The most important feature of the common carrier system is that it is a regulated monopoly. Each locality, for example, is served by only one telephone company, and all long-distance phone services are handled by a single national company, AT&T Long-Lines. Because there is no competition and because communications services must be financially secure, common carriers are guaranteed a fixed rate of return on investment (usually 6-7%) by law. Rates are set through a public hearing procedure to insure that the public interest is the prime consideration.

The two major domestic common carriers are AT&T, which provides voice, video, and private line services currently and plans to provide a digital network in the near future, and Western Union which provides a variety of message and private line services. Although both AT&T and Western Union have operated switched message services (TWX and Telex, respectively), Western Union has purchased AT&T's share of this service. Several smaller telephone companies (GT&E being the largest), provide additional services.

The tradition position of common carriers as regulated monoplies has recently been threatened by a number of new companies, who have filed applications to provide Specialized Common Carrier Service. Based on the FCC's favorable decision on the Microwave Communications, Inc., application to provide service between Chicago and St. Louis (FCC Docket 16509), national and regional specialized carrier systems have been proposed. As a result of the policies under development in FCC Docket 18920, it is likely that specialized carriers will be permitted to offer significant competition to existing carriers, hopefully providing lower rates and increasingly flexible service tariffs. The two major specialized carrier applicants are the MCI Carriers, an association of locally owned companies affiliated with MCI, proposing voice and data private line services, and Data Transmission Co. (DATRAN), which has proposed a switched, all digital network designed for data users.

Most likely, the entry of new common carriers will result in lower rates and improved services to all users. Information network techniques for educational application will benefit greatly.

Other new technological developments with Common Carrier implication include Communications Satellites and CATV, both of which can be used to provide low cost, flexible Common Carrier services.

B. REVIEW

Outside the field of regulatory economics, little independent research has been done on communications common carriers. Western Union, AT&T and DATRAN are sources of technical data on the development of new transmission techniques, and the FCC has published several information bulletins on common carriers regulation. The most comprenhensive of the latter, Common Carrier Services (FCC Information Bulletin 12-C, June, 1971), describes the common carrier services available and potential developments.

The legislative and regulatory background of current communications issues, including common carriers, are described in a legally oriented paper by Stephen Perlman, Legal Aspects of Selected Issues in Telecommunications. Relevent FCC Dockets (particulary Docket Nos. 16509 and 18920) also provide good descriptions of these issues.

Two books, Communications in the World of the Future by H. Hellman and Future Developments in Telecommunications by J. Martin, provide highly understandable discussions of the technical relationships existing between information transmission and information reception. The former book is introductory and useful for the telecommunications layman; the latter requires at least a cursory knowledge of telecommunications.

REFERENCES

Cole, Zylstra and Raywid, Attorneys at Law, A Video Common Carrier System in Florida. An application to the FCC. October, 1971. Video Microwave, Inc.

Twenty-eight locations in Florida plan to submit applications for the formation of a two-way switched video microwave system for transmission of common carrier video services. This is the initial application and it indicates provisions to interconnect the nine (9) educational stations in the region to each other and to the national public television network. For educational use, the company indicates that it is willing to treat its investment on an incremental basis so that it can provide quality service at minumum prices for educational television. It estimates that these prices can be as much as 30 per cent less than the reduced prices negotiated by the Public Broadcasting Service with the Bell System. The implication to education is that as specialized data transmission service becomes available, the cost to educational telecommunication will decrease thus encouraging the greater utilization of educational technology equipment.

Common Carrier Services, (FCC Information Bulletin 12-C, June, 1971).

This FCC report is an excellent historical and application-oriented history of common carrier services. It includes a chronological survey of the advent and current status of the regulatory laws, The application portion of the report describes the relationships between the common carriers and CATV and satellite communications, including both the global and domestic satellite systems. While the report does not address any direct aspects of educational telecommunications, the comprehensive overview of the entire common carrier capability within the U.S. does provide an indication of potential resources that could be brought to bear towards establishing a nationwide telecommunication network.

The Data Transmission Market of the 1970's. A major research study conducted by the Data Transmission Company. Copyright 1970.

This study was undertaken to survey the domestic data communications market through 1980 for seven selected economic segments. These segments represent a substantial portion of the domestic, civilian economy and probably an even greater portion of the nation's data communication market. The paper predicts, for example, a cumulative growth from 1970 of 1650% in transaction volume, and 1100% in data com-

munication termination points. Such an increase could result in sharply reduced equipment and common carrier costs which would be beneficial to educators.

Dittberner Associates. "Interconnection Action Recommendations". A report to the Common Carrier Bureau, FCC. Sept. 1, 1970.

This report describes the direct interconnection of customer-provided equipment with the common-carrier. The report recommends that such interconnection be permitted as long as the customer-provided equipment meets the standards for network protection capability that were developed by the common carrier and approved by the FCC, and as long as the equipment is installed and maintained by a FCC certified installation / maintenance organization or individual contractor. These recommendations have significant educational implications in that the educational community would be able to purchase educational technology equipment for direct connection to the common carriers. This should encourage companies to develop peripheral equipment for the educational community.

Hellman, Hal. Communications in the World of the Future. New York: M. Evans and Company, Inc., 1969, 201 p.

This introductory book, written for the layman, describes the technical relationships that exist among the information source, the transmission of information, the reception of information. It offers the educational community an opportunity for a technical understanding of a communication system and thus an understanding of the role of a particular piece of educational technology equipment in the entire telecommunication system. The book also predicts some future application of communication systems and equipment and thus allows the educator to extrapolate these applications to education.

Littlechild, S. C. Peak-Lead Pricing of Telephone Calls. The Bell Journal of Economics and Management Science, New York. Autum 1970, pp. 191-210.

Planning for improving the efficiency with which resources are used in the communication industry depends upon bringing the cost of services into line with marginal costs. This paper develops a mathematical programming model to determine optional prices in this network structure. This article is a sophisticated analysis of the technical and economic aspects of telephone common carriers as they relate to cost. Since the future utilization of educational telecommunication equipment will be directly related to common carrier costs, the mathematical approach to this subject should provide the educator with a detailed and comprehensive insight into this area.

Martin, J. Future Developments in Telecommunication. Prentice Hall, Inc. Englewood Cliffs, New Jersey: 1971, 413 p.

This book presents a technical review of techniques used for telecommunication transmission and the relationship of this transmission to the originator and receiver. It outlines the techniques utilized for processing switching networks and digital transmission. Although the contents are not of high technical or mathematical nature, the reader should have some knowledge of telecommunications and be familiar with the terms and general concepts.

Perlman, Stephen B. Legal Aspects of Selected Issues in Telecommunications. AFIPS Press, Montvale, N. J., December 1, 1970, 143 p. B.-290

This report originally produced for the National Science Foundation, identifies and assesses some of the pervasive influences of the newed inter- and mass-communications developments. It also treats the discernable national communication policy emanating from the current increasingly differentiated consumer demand that is causing the once-distinct segments of the industry to blur and frequently overlap. This report is of additional significance since it provides an excellent appended set of footnotes of the legal and regulatory aspects in telecommunications. This broad range of references, most of which relate to common carriers, will provide the educator with sources of specialized information. For example, adequate references for copyright problems would be of particular significance to the educator in his need for displaying and utilizing information. The footnotes also provide good reference to the interrelationship between common carrier regulations and other connecting portions of telecommunications systems.

President's Task Force on Communication Policy. Final Report. Chapter Six. The Domestic Telecommunications Carrier Industry, Washington, U.S. Government Printing Office. December, 1968. 62 p.

This report concludes that the basic structural element of domestic telecommunication services - the integrated provision of public message telephone service - is satisfactory; and the case for private monopoly regulated by public authority is convincing. As a twin conclusion, the report recommends releasing and encouraging potentialities for improvement which might otherwise be restrained by tradition or regulatory practice. In this latter regard, more liberalized entry into private line service is considered a salutary competitive pressure resulting in new kinds of services offering a wide range of quality, capacity, and price levels to varying needs of particular user groups. The implication to the educational community of the new specialized microwave service would be lower cost and greater availibility for educational telecommunications whose inherent price reduction would enhance the utilization of educational technology equipment.

Reagan, Jr., Fonnie H. A Manager's Guide to Phone and Data Sources, *Computer Decision*, October, 1971. 4p.

This article is a survey of common carrier facilities with guidelines for their best selection according to the individual requirements. The various types of communication facilities are classified according to two criteria: speed and system arrangement. The public telephone network, wide area telephone service (WATS) and leased voice-band lines are considered and evaluated from an economic and utilization viewpoint. The article notes that WATS is seldom justified for data communications unless the user has access to an existing trunk with unused time available. Between leased lines and direct distance dialing (public telephone network), the pertinent factors are the distances to each communication point, the degree of loading, and the time of day when the communications are made. This article provides the educator with a functional and economic insight as to maximizing the utilization of common carriers.

The Revolution in the Phone Business, *Business Week*, November 6, 1971, 7 p.

This article contains projections of future telecommunication systems that interconnect with the common carriers and the related projected impact of each system on the common carrier. Predictions note that the communication plant investment is growing so rapidly that by 1980, the *annual* rate of investment could equal the *total* value of plant now in place - over $40 billion a year. Additionally, the massive wiring project that will bring CATV to the cities may require an investment of another $30 billion to $50 billion in the next nine years. This investment will provide and result in a growth market for new products and services. The article should provide the educator with an insight into the very large projected growth of telecommunications and their inherent implications to education through both increased facilities and reduced costs, stemming from specialized service.

In the Matter of)

Free or Reduced Rate Inter-) Docket No. 18316
connection Service for)
Non-Commercial Educational)
Broadcasting.)

Summary

The issue here is the implementation of Section 396(h) of the Communications Act of 1934 which permits "free or reduced rate interconnection services for non-commercial educational television or radio services, subject to such rules and regulations as the Federal Communications Commission may prescribe." Having determined that preferential treatment to public broadcasting would be in the public interest, the Commission opened this proceeding to set the rules governing such services and to determine the rate to be paid for such service, if any.

Major Participants

Corporation for Public Broadcasting: The customer for the national public network. Being the major advocate of public television interconnection, CPB prefers free interconnection, but engaged in negotiation with AT&T in effort to develop a fair rate.

AT&T: Prime supplier of interconnection services. Opposing free service, AT&T offered below-cost pre-emptable service, or full service at cost, including construction of new facilities.

DHEW Under Secretary James McCrocklin: Interested in services to be provided and conditions. Questioned whether non-broadcast and satellite services would be included.

NAEB: Supported strong reporting, the need for interconnection and free rates.

NET: Discussed problems of program distribution with live network distribution to emphasize need for interconnection.

Ford Foundation: Major source of public broadcasting funds. Considered anything less than full, non-pre-emptable network unacceptable.

Eastern Educational Network: Observed that low quality, "ETV tariff" service not sufficient technically. Emphasized regional network core for national network.

JCET: Supported free rates.

State and Regional Educational Broadcasting Groups: Noted that inability to pay high rates limited plans. Tape distribution arrangements are inadequate. Some also experienced problems obtaining desired service from AT&T at any price.

Bay Area Educational Television Association
Central California Educational Television
The Central Educational Network Association
Florida State Department of Education
Greater New Orleans Educational Television Foundation
Maryland Educational-Cultural Broadcasting Commission
Nebraska Educational Television Commission and the University of Nebraska
The Ohio Educational Television Network Commission
Public Broadcasting Committee for the Federation of Rocky Mountain States
Southern Educational Television Network

Docket 18316

U. S. Independent Telephone Association: Suppliers of additional transmission services. Opposes free or below actual cost rates because of unwillingness to pass charges on to the other users.

In the Matter of)
Free or Reduced Rate Inter-) Docket No. 18316
connection Service for)
Non-Commercial Educational)
Broadcasting.)

Section 396(h) of the Public Broadcasting Act of 1967 amendments to the Communications Act of 1934 states that "Nothing in the Communications Act of 1934, as amended, or in any other provision of law shall be construed to prevent United States communications common carriers from rendering free or reduced rate communications interconnection services for non-commercial educational television or radio services, subject to such rules and regulations as the Federal Communications Commission may prescribe."

Accordingly, on September 5, 1968, the FCC adopted a Notice of Proposed Rulemaking. In its comments, the Commission noted a Senate Commerce Committee report expressing confidence that "the communications common carriers will recognize the great public service potential that non-commercial educational broadcasting has and the importance of interconnection facilities to the system." [1]

Anticipating requests for such service, the Commission stated that it believed that it would be in the public interest for the carriers to provide it. Therefore, the Commission proposed a new section 43.74 to provide rules governing such service. Since the Commission expected that as operational experience was gained, changes or modifications might well be required, a strict set of reporting regulations was imposed on the carriers to provide data on the quality, cost and availability of services. In terms of rates, the proposed rules stated specifically that service would be provided at "free or reduced rates". The proposed rules were quite general as to services and rates, and very specific in terms of common carrier reporting.

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[1] Senate Report No. 222, page 111.

Many of the state and regional public broadcasting organizations were quick to submit statements indicating their interconnection needs. In every case, the major problem was that the rates charged by AT&T were too high for underfinanced ETV organizations. Although crude tape distribution networks were in existence, the time factor involved made certain current affairs programs impossible. Additionally, some of the regional organizations, such as the Southern Educational Television Network, had experienced difficulty in obtaining facilities from AT&T even when willing to pay the price.

Department of Health, Education and Welfare Under Secretary James McCrocklin raised a number of questions about the proposed rules. HEW requested clarification as to what services would be included, indicating an interest in non-broadcast services, and whether COMSAT would also have to provide reduced rate service. HEW indicated a concern about who would bear the cost and suggested that reports clearly show the effect that reduced rate service had on other services and the rates paid by general users. Finally, HEW raised the question of whether reduced rate users would have to accept a lower priority of service.

NAEB felt that if it devoted considerable attention to the reporting procedures, it could assure that the desired interconnection would be achieved. After noting some of the reasons that interconnection was essential to public broadcasting, NAEB observed that if the limited funds available to public broadcasting were used to achieve full interconnection, little would be left for programming.

In its first comment the Corporation for Public Broadcasting said that interconnection was crucial to the goals of Congress that led to the establishment of CPB. Interconnection would allow timely national programming, permitting the local stations to concentrate on local issues and programming. In informal negotiations with AT&T, CPB had indicated a need for eight hours of interconnection, seven days a week, while AT&T would only provide two or three hours of reduced rate service several days a week. CPB said that it was unable to suggest an appropriate reduced rate until it knew exactly what AT&T's regular rates would be.

The U. S. Independent Telephone Association (USITA), whose members would have to supply some of the interconnection facilities, noted that some of the new services could not be supplied without the construction of new facilities, the cost of which are usually paid by the users. However, in this case, it might be necessary to pass the costs for new facilities on to the general public.

One of the leading producers of public broadcasting programs, NET, went into great detail about the programming problems that arose from inadequate live interconnection. Tape distribution networks are slow, inefficient, and unfair to stations at the end of the mailing list. Some ambitious or important programs had been abandoned because delayed broadcast would make them rapidly outdated. NET indicated that AT&T had shown a willingness to provide service if its out-of-pocket expenses were met.

The National Association of Broadcasters supported the reduced rate principle, but felt that costs incurred by AT&T, such as construction, should be determined before rates were set.

AT&T noted that Section 396(h) offered no guidelines as to how rate reductions should be determined, particularly whether the reduction should go below costs. AT&T opposed so-called "free" interconnection since someone had to pay the costs. If for example, public broadcasting service cost exceeded revenues, either the general rates would have to be raised or the government would have to subsidize AT&T. A detailed estimate of the regular charges was also presented by AT&T. Assuming a 91 point network divided into five regions with national origination in New York, Washington, and Ann Arbor operating eight hours daily, the estimated cost would be about $9 million a year in network charges under Tariff 260 regulations.

AT&T by this time had made two proposals to the public broadcasting community. Under the first, service would be provided between 2:00 a.m. and 12 noon when commercial facilities have limited use. This service would be available to a limited network serving about 120 stations at a nominal fee (about $53,000 per month or 15% of the normal charge), and would permit taping of programs for rebroadcast later. The second proposal would deliver programming, at the same nominal fee, from 8:00 to 10:00 p.m. five nights a week. Local stations would be interconnected to the system at regular rates. Whenever necessary, the facilities would be subject to pre-emption for service to regular customers.

In response to these proposals, the Ford Foundation emphasized the urgent need for interconnection of regional and national networks. Ford also indicated the need for a strong reporting system to discourage delays and denials of service. While appreciating AT&T's offers, the Ford Foundation considered neither offer adequate. Few public broadcasting stations had either the video tape equipment or the staff necessary to do late-night/early-morning taping of programs, and the cost of preparing for and operating on such a basis might be prohibitively expensive for some stations. The limited "prime time" offer suffered from the possibility of pre-emption which could seriously cripple the network. Ford estimated interconnection needs to be from 3:00 to 11:00 p.m., seven days a week for a 91-point network serving a total of 160 stations. It suggested that local station interconnection should also be charged at the reduced rate, and that the final rate solution might involve a combination of free and reduced rate service. Finally, Ford pressed for a rapid resolution since the actual construction of facilities by AT&T and the independent carriers would take time.

The Eastern Educational Network commented on its experimental operations of a duplex (two-way) Boston, New York, Philadelphia, and Washington network on a 24-hour, seven day a week basis. Using the so-called "ETV tariff" (Tariff 260, Series 7004), EEN received a lower quality of service than that supplied to regular users. Although adequate, this quality of service would not be fully satisfactory for full-scale national interconnection of color television. Consequently, EEN requested that AT&T indicate the technical specifications of the service it would provide on a reduced rate basis. EEN also noted that the regional, decentralized network approach was important and should be emphasized in planning a national network.

Comments from operating telephone companies, including Bell System operating companies, indicated that there was no disagreement with the need for public broadcasting interconnection. However, USITA observed that free or reduced rate services be extended to non-broadcast services. AT&T also restated its comment that Section 396(h) was permissive, but not mandatory.

On April 9, 1969, the Commission adopted a Report and Order which resolved many of the uncertainties of the proposal rules. The Commission agreed to require more frequent reporting, with special attention to situations where the carrier could not or would not provide the requested services. The Commission required carriers to construct, the necessary facilities to handle full service completely equivalent to that provided full-rate users. Costs incurred in providing these services would be figured into the interstate tariffs. However, the Commission agreed that the special rates could only apply to broadcast services. Rather than settling specific rates, the Commission encouraged AT&T and CPB to work out a mutually satisfactory arrangement.

However, CPB informed the Commission that it still needed clarification on rates. AT&T was proposing to give CPB all requested services at $6-7 million (40-50% of standard rates) per year, which CPB considered too high. CPB noted that negotiations with AT&T had indicated that they intended that the rates cover all costs. CPB continued to call for free interconnection. CPB also reported on pre-emption problems with its limited interconnection at that time. High commercial demands for service when public broadcasting most needed and wanted service, such as during the Apollo moon landing, often thwarted efforts to cover important events. CPB emphasized that full service was desperately needed and that the carriers must equip themselves to meet the needs of public broadcasting.

In its reply, AT&T observed that neither it nor CPB was entirely happy with the temporary arrangement. As permanent facilities were constructed, the pre-emption problem would disappear. As far as rates were concerned, AT&T continued to oppose free service since other users would have to pick up the costs and it might lead to an abuse of limited communications resources. AT&T asserted that its proposed rate would only cover actual expenses, including construction.

The Commission responded to these statements with a Memorandum Opinion and Order on November 7, 1969. The Commission made four rulings to clarify its stand. The first ruling stated that public broadcasting must not be served on a lower priority basis. Service must be equivalent in all respects aside from price. Second, all costs including construction, should be applied to the interstate rate base and operating expenses. Consequently, all users should share in any additional burden. Third, it ruled that "the carriers should proceed expeditiously to equip themselves with the facilities necessary to fulfill the interconnection objectives of the Public Broadcasting Act of 1967." The fourth ruling stated that, effective immediately, public broadcasting should have equal access with commercial interests to the available facilities. The carriers cannot pre-empt public broadcasting before its permanent facilities are ready. If pre-emption is necessary because of inadequate facilities, it must be distributed between commercial and public users. Finally, although the Commission would prefer an informal agreement between AT&T and CPB, it would take action if no agreement was reached.

AT&T felt that the Commission's orders were premature since it could not provide for service or begin construction until it knew exactly what the CPB network would be. However, CPB claimed that AT&T had been given a detailed and definite plan.

The ABC network expressed concern that its services might be affected by the Memorandum Opinion and Order and wanted clarification of whether commercial network service might be adversely affected. While ABC agreed with the goal of free or reduced rate service for public broadcasting, it noted that a large burden would fall on AT&T's biggest customers, the commercial networks.

At the specific request of the Commission, CPB detailed its reasons for wanting free service. CPB noted the high importance Congress had placed on interconnection and the problem of limited funds. CPB observed that the FCC could easily review CPB requests for service to guarantee that the free service did not lead to an abuse of communications facilities. CPB suggested that once public broadcasting became more established and economically secure, it might be possible to assume some of the costs.

NAEB picked up this "now is when free rates are needed most" theme in its support of free rates. JCET also supported the free rates concept, noting the issue was basically whether the Commission should order the carriers to provide free service.

AT&T, however, observed that all enterprises have limited funds to some extent, and the burden of free service would fall heavily on other users of communications services. AT&T felt that its then-current offer of 40% of the standard rate was reasonable and continued to contend that free service would lead to abuses.

USITA urged continued negotiations and contended that limited funds do not dictate free rates. With a reduced rate situation, funds would still be available for both interconnection and programming.

A comment was also received from the Communications Workers of America who supported free interconnection. CWA charged that AT&T's only concern was revenue, not public service.

As negotiations continued between AT&T and CPB, the Commission sent them a letter on August 13, 1970, advising them of certain conclusions reached by the Commission. The letter indicated that a majority of the Commissioners did not support free interconnection, and that the rates charged CPB should at least cover incremental costs, based perhaps on a study of such costs conducted by AT&T. The total of these costs amounted to about 33% ($5.2 million) of the regular rate. The letter also permitted some flexibility in rates over the first few years to allow for CPB budgetary problems.

During much of 1970 and early 1971, AT&T and CPB engaged in a complex series of negotiations centering around the rate to be paid and the construction of new facilities. For example, CPB took issue with about $2 million of AT&T's proposed incremental costs.

There were also difficulties with the construction schedule based on misunderstandings between AT&T and CPB to the extent that CPB, in May, 1971, found it necessary to request the Commission to direct AT&T to begin immediate construction of the remaining network.

Because of the inability of AT&T and CPB to completely resolve their differences, the Commission issued a Memorandum Opinion and Order on June 3, 1971. After fully summarizing the conduct of the negotiations, the Commission took certain actions to clarify and resolve the problems. Since CPB had not wanted to invoke the sharing provision of the November, 1969, Memorandum Report and Order, the only contested section of that decision, the issue became moot, although the Commission retained the provision if it should be necessary in the future. As for the charges to CPB, the Commission had already rejected the free rate alternative. After examining the differences between AT&T's suggested charges and CPB's unchallenged incremental costs, the Commission decided most of CPB's objections were not justifiable. However, it did conclude that a more equitable charge by AT&T to CPB would be about $4.9 million. Based on the development of the necessary facilities, the charges would begin at $2 million for the year beginning July, 1971, and increase to the full $4.9 million in July, 1974. These charges do not include those imposed by independent telephone companies for additional facilities since there should be no problem in reaching agreement on them.

The Commission responded to the facilities construction problem by requiring AT&T to make monthly reports to the Commission on its progress. The Commission required AT&T to provide a 71-point network by March 31, 1972, and a full, expanded 110-point network by January 1, 1973.

A continuing theme is the Commission's statement in this docket that this was an isolated case and should not be regarded as a precedent setting proceeding for other special communications user groups. The special treatment received by CPB was in response to a specific Congressional intent for a specific organization.

In the Matter of)

Microwave Communications, Inc.)
for Construction Permits for)
Fixed Point-to-Point Micro-)
wave Radio Systems Between)
Chicago, Illinois and St. Louis,)
Missouri.)

Docket No. 16509

Summary

Microwave Communications, Inc. filed an application in 1964 to provide microwave common carrier service between Chicago and St. Louis. Proposing to provide customized service at rates lower than those charged by existing common carriers, MCI's application marked the beginning of the Specialized Common Carrier controversy.

Major Participants

Microwave Communications, Inc.: Applicant proposing to provide new service. MCI claimed that it could successfully compete with AT&T by providing new flexible services at lower rates.

AT&T: Existing primary common carrier. AT&T and its operating companies defended their ability to furnish all requested services at reasonable rates. Competition would cause less efficient service by fragmenting the market.

Western Union: Existing common carrier opposed to granting of MCI application. Existing carrierscan provide all needed services.

GT&E: Existing common carrier opposed to concept of common carrier compepition

Potential Users: Large group of small businesses in MCI-opera area. All indicated dissatisfaction with rates and service provided by existing carriers and indicated a willingness t use the new service.

In the Matter of)

Microwave Communications, Inc.) Docket No. 16509
for Construction Permits for)
Fixed Point-to-Point Micro-)
wave Radio Systems Between)
Chicago, Illinois and St. Louis,)
Missouri.)

In 1964 Microwave Communications, Inc. (MCI) filed an application with the FCC for a Construction Permit to provide microwave common carrier service between Chicago and St. Louis. This action marked the beginning of the Specialized Common Carrier issue. In order to get public reaction to the MCI proposal, the Commission assigned it Docket No. 16509. Additional applications related to this route were assigned Dockets Nos. 16510-16519.

In essence, MCI proposed to compete with the existing commo carriers, AT&T and Western Union, to provide flexible point-to-point voice and data service. Using a narrow 2 KHz bandwidth basic channel, the customer would be able to order the exact bandwidth needed in contrast to the fixed bandwidth services offered by the existing carriers. MCI contended that its servic would result in savings arising from competitive pressures and from the fact that users need not pay for any more service than they actually needed.

AT&T strongly opposed the MCI application, observing that it could provide all requested services. AT&T contended that competition of this type would result in inefficient duplicatio of facilities, and consequently not result in rate savings.

The other existing common carriers indicated similar opposition to the entry of new, specialized common carriers.

MCI noted that in addition to potential rate reductions, competition would force the existing carriers to provide more flexible services. Among the flexible services proposed by MCI would be no restriction on the use of customer-owned auxiliary equipment, of particular value to computer data users. MCI claimed that the availability of this kind of flexible, need-oriented service would force the existing carriers to become more flexible.

Many commercial communications users in the Chicago and St. Louis areas filed comments supporting the MCI proposal. Many companies indicated that AT&T's rates and wide bandwidth (4 KHz minimum) made effective use of telecommunications technology for business purposes prohibitively expensive. All were attracted to the MCI concept of paying for no more service than actually used. Many of the companies indicated a firm intention to use MCI services when they became operational.

Because this was an isolated case, not necessarily a policy decision, conduct of the proceeding was assigned to a Commission Hearing Examiner, who examined the evidence presented in the Docket. In accordance with the Commission's normal license granting procedures, an oral hearing was held to give the opposing parties an opportunity to present their cases and cross-examine each other. Finally, the Hearing Examiner recommended that the Commission grant MCI's application and the Commission concurred on August 13, 1969.

After rejection of Petitions for Reconsideration by the Common Carriers in January, 1970, AT&T and the other carriers brought the case before the U. S. Court of Appeals for review (American Telephone and Telegraph Co. et al., v. Federal

Communications Commission Case No. 23959 and 23962). A decision on these cases is still pending.

The Commission's favorable response to the MCI application, however, prompted the submission of many other applications to operate specialized common carrier microwave services. Realizing that the policy issues avoided in Docket 16509 would have to be settled, the Commission opened Docket 18920 to determine what that policy should be.

In the Matter of)

Establishment of Policies) Docket No. 18920
and Procedures for Considera-)
tion of Applications to)
Provide Specialized Common)
Carrier Services in the)
Domestic Public Point-to-)
Point Microwave Radio)
Service and Proposed Amend-)
ments to Parts 21, 43 and 61)
of the Commission's Rules.)

Summary

As a result of the decision in the MCI case (Docket No. 16509), about 1700 applications for microwave stations were received from approximately 30 different applicants, all proposing to provide some form of specialized common carrier services. The Commission instituted this proceeding in order to resolve basic policy questions such as whether the entry of new carriers into the market would be in the public interest and what procedures might be necessary to regulate the new carriers.

Major Participants

MCI Carriers: Proposed nationwide system of interconnected specialized microwave routes. As the originator of the new carrier issue, MCI strongly advocated competition claiming lower rates and better service would result. MCI emphasized customized service to meet users' exact needs.

Data Transmission Company (Datran): Proposed switched, nationwide, all digital network. Datran asserted that the entry of new carriers would result in different services, many of which were already in demand, that existing carriers were slow to provide. Datran emphasized the special needs of the data user in its design of an all digital network.

Other New Carrier Applicants: Strongly supported concept of new carrier competition against existing carriers, if not always against each other. All propose new, specialized services to users at lower rates.

Associated Independent Telephone Microwave, Inc.
CPI Microwave, Inc.
Interdata Communications, Inc.
Microwave Service Company, Inc.
Microwave Transmission Corporation
Mitran, Inc.
Nebraska Consolidated Communications Corporation
New York-Penn Microwave Corporation
Southern Pacific Communications Company
United Video, Inc.
Western Tele-Communications, Inc.
West Texas Microwave Company

Department of Justice: Supported competitive pressure on existing carriers. The Commission should minimize restrictions on new carriers to encourage a free and open market.

Small Business Administration: Supported new carriers because of potential economic benefits to small businesses unable to afford adequate services from existing carriers.

JCET: Supported FCC Staff analysis advocating entry of new carriers. The projected lower rates and flexibility due to competition should permit development of new telecommunications systems for education.

Business Equipment Manufacturers Association: Represented a number of companies in the data processing field. Supported new carriers to the extent that existing services remain available. New carriers should be encouraged to provide supplemental services to meet growing data communications needs.

National Retail Merchants Association: Noted urgent need for new voice and data business services not available from existing carriers. Supported immediate entry of new carriers to meet these needs.

Greyhound Corporation: Representative of a large number of potential users supporting the concept of new carriers in general and certain specific applications. Existing carriers are not meeting rapidly growing communications needs and new carriers are urgently needed to provide a variety of services with a minimal delay for procedural matters.

American Society for Information Science: Supported entry of new carriers to lower cost of information network systems.

Computer Timesharing Services Section of the Association of Data Processing Services Organizations, Inc.: Data processing services trade association. Strongly supported immediate entry of new carriers because existing carriers are not able to provide badly needed new services. Competition is necessary to encourage technological development.

Utilities Telecommunications Council: Representative of public utility communications users. New carriers are necessary to improve services. Supported competitive market to give user a choice.

AT&T: Major existing carrier. Maintaining that it could provide all requested communications services, AT&T opposed common carrier competition at this time. Competition might fragment the market and result in inefficient and uneconomical communications services. The need for new carriers has not been established and further study and hearings are necessary to determine impact on existing carriers.

Western Union: Major existing carrier. While not opposed to the competition concept, Western Union stated that as an existing and proven carrier, it could most effectively compete with AT&T. The market for new communications is limited and the extent of new competition should be strictly controlled to prevent damage to existing carriers.

GT&E Service Corporation: Major independent common carrier. Competition with existing communications structure is wasteful and contrary to traditional regulatory approach. Opposed new carrier entry without extensive hearings to establish actual need for them.

Other Existing Carriers: Opposed new carrier competition. Communications common carrier services should be supplied on a regulated monopoly basis. Competition will waste communications resources and weaken existing independent carriers. The need for new carriers has not been established.

United Telephone System
National Association of Regulatory Utility Commissioners
United States Independent Telephone Association

In the Matter of)

Establishment of Policies) Docket No. 18920
and Procedures for Considera-)
tion of Applications to)
Provide Specialized Common)
Carrier Services in the)
Domestic Public Point-to-)
Point Microwave Radio)
Service and Proposed Amend-)
ments to Parts 21, 43 and 61)
of the Commission's Rules.)

As a result of the decision in the MCI case (Docket No. 16509), about 1700 applications for microwave stations were received from approximately 30 different applicants, all proposing to provide some form of specialized common carrier services. The most significant of these applications were from Data Transmission Corporation (Datran), which proposed a nationwide, switched digital network, and from a series of locally owned companies associated with Microwave Communications of America, Inc. (MCI Carriers) who proposed a national system of microwave point-to-point services based on the original MCI applications.

In order to resolve basic and crucial policy and procedural questions raised by the specialized common carrier concept, the Commission issued a Notice of Inquiry to Formulate Policy and Notice of Proposed Rulemaking and Order on July 17, 1970, in Docket 18920.

Since this was an important issue, the FCC held up individual consideration of any applications until the policy issues could be settled. However, the Commission indicated an intention to make policy decisions rapidly in order to begin processing individual applications. The Commission identified five issues to be resolved:

> "A. Whether as a general policy the public interest would be served by permitting the entry of new carriers in the specialized communications field; and if so,
>
> "B. Whether comparative hearings on the various claims of economic mutual exclusivity among the applicants are necessary or desirable in the circumstances;
>
> "C. What standards, procedures and/or rules should be adopted with respect to such technical matters as the avoidance of interference to domestic communications satellites in the 7 GHz band, the avoidance or resolution of terrestrial frequency conflicts and route blockages both vis-a-vis the facilities of established carriers and among the applicants, and the use of frequency diversity;
>
> "D. Whether some measure of protection to the applicant's subscribers is called for in the area of quality and reliability of service; and
>
> "E. What is the appropriate means for local distribution of the proposed services?"

Issue A was the basic policy question, Issues B and C dealt with procedural questions necessary to evaluate and process the applications, and Issues D and E dealt with lesser policy issues that could affect specific applications.

Of the proposals received by the Commission, Datran's was the most extensive, proposing a nationwide, switched, occasional use, digital network designed specifically for data transmission. Datran noted that the Bell System's analog switched telephone network was not adequate in terms of speed, noise characteristics, or reliability for the special needs of the data user. Datran pointed out that AT&T had recognized this inadequacy and had developed plans for a future data-only network. Datran, however, suggested that it could supply the service sooner and cheaper. Its system would offer a choice of several transmission speeds in a full duplex mode (two-way) providing very high reliability and transmission accuracy, with end-to-end service direct to and from the subscriber's facilities. Datran asserted that competition would result in lower rates and greater service innovation.

The MCI Carriers suggested "customized" communications, private-line channels for all tranmission forms providing point-to-point service between many areas of the country. Based on its successful Chicago to St. Louis application, MCI proposed to provide service between major terminals, with the customer providing local loop interconnection to his own facilities through private transmission facilities or existing common carriers, or (as proposed in a later addition to the application) by an MCI-supplied local carrier distribution service.

MCI offered great channel flexibility for either analog or digital signals with the system designed for high quality transmission of data communications. MCI would offer part-time, shared use of channels and one-way transmission (or two-way with a different bandwidth in each direction) with service rates going as low as 5 cents per mile per month. MCI emphasized that no existing common carrier could currently supply the degree of flexibility to meet the customer's exact needs that MCI proposed. MCI stated that, unlike the voice telephone system which required a monopoly, the private, point-to-point communications service could best be offered on a competative basis to meet the customer's varying needs.

A number of other companies filed applications offering to provide services similar to those offered by MCI. In some cases, the applications were mutually exclusive, and some proposed specialized service to a specific class of users, such as CATV systems. All claimed that existing carriers could not provide the required services in the same manner.

The response to the various Commission Notices was heavy, particularly with respect to Issue A. With the exception of the existing common carriers and telephone oriented organizations (AT&T, Western Union, GT&E, the United Telephone System, United States Independent Telephone Association, and the National Association of Regulatory Utility Commissioners), all of the parties filing indicated support for the entry of new common carriers. Most indicated support for a specific FCC Staff analysis urging the entry of new specialized common carriers to meet rapidly expanding and specialized communications needs. The Staff analysis, included in the original Notice but not necessarily endorsed by the Commission, concluded that there was a sufficient demand for new services to support both new and existing carriers and that competitive factors would serve to benefit the public. The Staff pointed out that there would be little risk in permitting the new carriers to operate since if they failed, the existing carriers, protected by a regulatory umbrella, would be able to supply services. Without testing the new concept, however, it would be impossible to know if the public could gain improved service at lower rates.

Most of the support for the new carriers came from communications users and organizations and equipment manufacturers. Both the Department of Justice and the Small Business Administration indicated support.

Among educational interests, NAEB and JCET noted that new services and lower rates will be required by educators for interconnection of educational institutions. In an appearance during the Oral Arguments in January, 1971, Frank Norwood of JCET commented on the educational potential of information networks. The ability to share facilities and utilize variable bandwidths offered by Datran and MCI would make such networks economically feasible. JCET emphasized that neither the existing rates of existing carriers nor private user-owned systems would permit the operation of information networks because of limited funds. Several universities filed comments supporting the new carriers since existing services were too expensive and limiting.

The opposition of the existing carriers centered around the procedures used to make a decision. Although differing as to the specific procedure preferred, both AT&T and Western Union felt that the rulemaking procedure was not formal enough for a decision of this importance.

Questioning the Staff analysis, AT&T claimed that there was insufficient evidence to indicate a need for additional carriers. AT&T claimed that it supplied adequate service, that it could supply new needs, and that it had plans to construct a digital data network by 1975.

Western Union also claimed that it saw little evidence of a need for the new services, that it would suffer more from the competition than AT&T, and that it would be consequently weakened as AT&T's largest competitor.

Discussions concerning Issue B centered around the extent of competition to be permitted among carriers. Four of the new applicants, particularly in Texas, suggested that each should have an exclusive route. Questions on the proper procedures necessary to resolve such conflicts were also discussed.

Issue C dealt with technical standards necessary to avoid interferene with domestic communications satellite systems and to avoid wasteful use of available microwave frequencies.

After Oral Arguments in January, 1971, the Commission issued a First Report and Order on June 3, 1971. This document, running close to 200 pages in length, dealt with Issues A, B and C. Because of insufficient comments, it postponed Issued D and E for further proceedings.

The Commission noted the massive support for the concepts expressed in the Staff analysis. After rejecting the carriers' objections to the method of the proceeding for legal reason, the Commission indicated its agreement with the Staff analysis. In expanding and amplifying its analysis, the Commission agreed that the new carriers and many users had produced sufficient evidence to indicate that the need existed. Observing that the services and technology offered by the new carriers would be significantly different from those offered by the existing carriers, the Commission indicated that it believed that new carrier entry into Common Carrier markets would be in the public interest. The Commission indicated a belief that the market would be sufficient to accommodate both the existing carriers and the new carriers on a competitive basis. The Commission, in deciding to allow new common carriers, emphasized that the policy favoring new terrestrial systems offered no protectio to such systems against any competition that might be offered by domestic satellites. The existance and viability of the new carriers would not be a factor in the Docket 16495 decision.

The exclusivity question of Issue B was resolved in favor of open competition among new systems. Since none of the applications received would be technically infeasible because of frequency crowding, the Commission decided to permit the competitive market to determine the viability of systems.

The technical questions of Issue C were resolved to permit maximum use of available frequencies. Several new technical rules were instituted to insure that no microwave operator wasted frequencies, particularly in crowded bands shared with satellite services.

While keeping Issue E open, the Commission observed that any local common carrier should provide, upon request, interconnection service between the facilities of the customer and the new carrier. The Commission issued a Further Notice of Proposed Rulemaking on June 16, 1971, to discuss the construction of new local interconnection facilities by the new carriers. The Commission indicated support for this concept, but was uncertain which of several proposed microwave frequencies should be used.

The Commission, at this point, began the processing of individual applications, subject to the resolution of Issues D and E.

Educational Implications

Docket 18316

In establishing the Corporation for Public Broadcasting (CPB), Congress included a vague statement about providing "free or reduced rate interconnection" for non-commercial radio and television broadcast services. The proceedings in this docket involved CPB's desire to use that provision to obtain full network service for public broadcasting equivalent to that provided to the commercial networks. Educational groups, such as NAEB and JCET, agreed that CPB network services would permit pooled resources in the production and distribution of public programming on a timely and economical basis to all stations. All noted that the regular rates charged by AT&T were prohibitively high for the inadequately funded public broadcaster.

Eventually, AT&T agreed to provide the requested services if the costs of any new facilities were paid by public broadcasting. This compromise position was accepted by the public broadcasters.

The networking was to be used mainly for public, rather than instructional, programming. Although some instructionally oriented programs, such as Sesame Street, use the network, most instruction programs do not.

Docket 16509

In this application, MCI proposed to provide voice and data transmission services tailored to meet the specific needs of the user who would pay for only that amount of specific service actually utilized. (Current carriers require that the user pay for a certain, "class of service" regardless of whether or not he uses all of the available bandwidth capacity.)

This would permit schools and other educational users to obtain specialized communications services at considerably reduced rates. The communications services would also be more practical since MCI would tailor its system to meet the customers' need. Since communication costs are such a signigicant portion of educational technology costs, a reduction in communication costs, would result in greater utilization.

The Commission's favorable decision in this docket led to a flood of applications covered in Docket 18920 which dealt with the specialized common carrier issue as a whole.

Docket 18920

Despite the objections of the existing carriers that they were able to provide all needed services at the lowest possible cost, the Commission determined that new carriers would be desirable since competitive pressures should result in better service and lower rates to communications users.

Educational interests will benefit from the lower rates and the flexible services that the new carriers offer. It remains to be seen, however, whether the actual operation of such carriers will result in significant changes in common carrier rates and services since none have yet gone into operation.

CATV

In the Matter of)

Amendment of Part 74, Subpart)
K of the Commissions Rules and)
Regulations Relative to)
Community Antenna Television)
Systems; and Inquiry into the)
Development of Communications)
Technology and Services to)
Formulate Regulatory Policy)
and Rulemaking and/or)
Legislative Proposals.)

Docket No. 18397

Summary

After many years of regulating CATV on a temporary and case by case basis, the Commission issued a set of proposed rules for comments from interested parties. The new proposed rules covered problems such as distant signal importation, local station protection, and program origination. Basic CATV policy issues were also investigated.

Major Participants

NAEB: Supported general development of cable, but with restrictions to guarantee protection of broadcast ETV and access of educators to cable capacity. NAEB advocated strong Federal regulation of cable, including a plan of channel reservations for education. A priority system was also proposed to place educational uses of cable ahead of commercial uses.

JCET: Strongly urged that at least 20% of cable capacity be reserved for educational use. Strong Federal regulation would be required to insure access to cable by education for both television and non-television services.

Eastern Educational Network: Strongly protested proposed rules governing the protection of local ETV stations. Representative of a number of ETV licensees and organizations, EEN requested that the Commission provide at least equal protection to commercial and non-commercial stations.

Commercial Broadcaster Groups: Opposed to local CATV advertising and owner originated local programming. Common carrier operation of CATV systems would be preferred. Free broadcast TV must be fully protected in order to serve rural areas and the poor.

Association of Maximum Service Telecasters: Major broadcaster group opposing cable interests. Strongly supported equal protection to all broadcast stations.

Corporation for Public Broadcasting: Urged that local public broadcasting should have first priority over distant signals. CPB emphasized the need for locally produced public programming.

Suffolk County Organizations for the Promotion of Education (SCOPE): Active in educational uses of CATV. Supported local cablecast programming by educational groups.

Vincennes University: CATV and ETV operator. Supported ownership of local CATV systems by ETV owners. CATV advertising useful to help finance educational programming.

American Civil Liberties Union: Strongly demanded full public access to cable system. CATV local programming should be handled on a common carrier only basis.

Department of Justice: Urged programming and ownership diversity for CATV.

AT&T: Suggested that Picturephone service would meet broadband communication needs. Cable should not become common carrier for non-television services.

Rediffusion International, Ltd.: Suggested alternative cable system allowing two-way capacity and unlimited channels.

National Cable Television Association: Major cable industry organization. Urged that CATV be allowed to develop with very little regulation to permit flexibility and experimentation. Master reservations plan for CATV would be premature until more is known about cable capabilities.

CATV Operators: Cablecasting should be permitted, but not required. Local advertising will be necessary to support local programming while keeping subscriber fees down.

Jerrold Electronics: Along with other cable equipment manufacturers, urged minimal regulation to allow development.

In the Matter of)

Amendment of Part 74, Subpart) Docket No. 18397
K of the Commissions Rules and)
Regulations Relative to)
Community Antenna Television)
Systems; and Inquiry into the)
Development of Communications)
Technology and Services to)
Formulate Regulatory Policy)
and Rulemaking and/or)
Legislative Proposals.)

Although a number of dockets are concerned with cable television issues, the prime CATV rulemaking proceeding is contained in Docket 18397.

On several past occasions, the FCC had opened CATV proceedings, primarily in order to assert its authority in the field or to formulate temporary rules. On December 12, 1968, the Commission adopted a Notice of Proposed Rulemaking and Notice of Inquiry to examine the broad question of CATV regulation. The Commission announced that its goal was to obtain the full benefits of developing technology for the public under the general guidelines of the Communications Act, with particular reference to new CATV technology and potential services.

A set of proposed rules, based on new regulatory experience gained since the Second Report and Order of Dockets 14895, 15233 and 15971 (which had established temporary rules in 1966), was included for comment. Among the suggested new rules was one permitting CATV systems to import distant ETV signals without special authorization unless the local ETV station protested "in a timely manner." This concept had been opposed by educational interests in an earlier separate proceeding. Other issues of particular concern included urban CATV development, local origination, and possible uses of CATV channel capacity.

Almost all educational interests, led off by the Eastern Educational Network (EEN), quickly protested the proposed ETV protection rule. EEN and NAEB pointed out that carriage of a distant ETV signal by a CATV system could damage the base of community financial support of a local station, or potential local station by fragmenting an already small audience. They complained that the Commission was placing an unfair burden on frequently understaffed ETV stations and called for at least equal protection to that offered commercial stations. In fact, they suggested that the 35-mile protection radius proposed for commercial stations might be insufficient for ETV stations, and NAEB suggested that 50-60 miles might be preferable to insure a broad community base for ETV stations.

A commercial broadcast group, the Association of Maximum Service Telecasters (AMST), gave strong support to the concept of equal protection to all broadcast stations, commercial and non-commercial. (It should be noted that AMST has long been one of the leaders in the fight against CATV as a threat to broadcast TV.)

The Suffolk County Organization for the Promotion of Education (SCOPE), an organization active in encouraging educational uses of CATV, made several recommendations to the FCC. It supported both local organizations and common carrier functions on CATV systems with no restriction on local educational cablecasting. SCOPE has been especially active in adding educational provisos to local franchise agreements to guarantee free CATV interconnection to every school, and as much as possible, a free educational channel for each school district within a CATV system's service area. SCOPE also recommended free interconnection of educational channels carried on adjacent CATV systems within five years of a system's construction.

Another issue of major concern to NAEB was that of program origination. Asserting that CATV systems should not actually operate as program originators, but should act as a common carrier outlet for locally produced programming, NAEB proposed a series of priorities for the use of CATV channel capacity. First priority would be given to any TV station signals that might be required by the FCC. Second priority would be given local municipal programming on channels provided under franchise requirements. Third priority would be given to one or more channels available at a free or reduced rate for local, non-commercial educational authorities. (At the later suggestion of the JCET, this was changed to request that 20% of the total capacity of a system be reserved for educational programming. This 20%, however, would include any ETV stations or local programming carried under the first two priorities.) The Fourth priority would be for general common carrier usage of the system.

For the most part, CATV operators and professional groups indicated a need for advertising; and an option, rather than a requirement for local origination. Several CATV companies pointed out that local advertising on CATV would make educationally oriented programming economically feasible. This view was supported by Vincennes University in Indiana which owns two CATV systems and an ETV station. Vincennes has found that advertising revenue is necessary to finance the production of educational materials. Many other CATV operator groups noted that CATV could provide much more local programming, including educational programs, than broadcast stations.

Commercial broadcasters opposed local CATV advertising because of competition and the threat of what they considered to be a variation on pay-TV. The broadcast networks and others expressed opposition to local origination by CATV operators, but did not oppose common carrier origination. The prime concern of the broadcasters seemed to be the preservation of the existing free TV structure, partially because of the difficulties that CATV has in servicing rural areas, and partially because of the financial burden CATV subscriber fees place on the poor.

A case was also made for a CATV approach similar to that taken by an English company, Rediffusion International, Ltd. The Rediffusion system offers individual HF (high frequency) cables to each receiver, using a central-office dial switching system. The two prime advantages are completely unlimited channel capacity and availability of restricted channels for privacy, as may be required in medical television and other applications.

The Justice Department indicated a desire to see a maximum amount of competition in the CATV area, including programming.

In addition to amending the NAEB priority system to include the 20% quota, JCET noted that CATV was only a part of a total, complementary telecommunications system necessary to meet as yet unknown needs. JCET viewed the Commission's role as one of encouraging diverse CATV services, and of reserving a "fair share" of channels for educational public service use. JCET clearly preferred FCC regulation of channel capacity rather than the uncertainties of the local franchise process. It argued that the 20% quota would guarantee that some excess channel capacity was dedicated to educational uses rather than commercial uses. Any special, non-television capabilities of cable systems would also be subject to the 20% rule. Program production arrangements would be made between the CATV operator and the educational user group. Finally, JCET endorsed a concept of encouraging non-profit CATV systems by giving them special concessions in the local origination area.

Commenting on the equal treatment for ETV issue, a number of ETV licensees stated that unless protection was afforded, essential ITV programming would be financially difficult to produce locally. The Corporation for Public Broadcasting emphasized that the first priority of CATV carriage (after any local broadcast signals) should go to the local public broadcasting organization. In all cases, local public broadcasting was emphasized.

The American Civil Liberties Union expressed a concern with access to cable systems. The ACLU indicated a desire to see a "universal two-way, switched, wide-band carrier system, analogous in all respects to the present narrow-band telephone carrier system." In essence, it was asking for a common carrier only cable system. This broadband communications concept was also expressed by a number of communications user groups.

In a second filing, NAEB restated its previous concerns for ETV equal protection and its priority system, indicating that some of the educational programs to be carried would include at-home and in-school instruction, closed circuit programming, and wide-scale distribution of ITFS programming. In opposition to the position of the National Cable Television Association (NCTA), NAEB expressed a need for a master plan for CATV that would include educational reservations to permit educational institutions to do long range planning. NAEB suggested that a public broadband communications entity, modeled along the lines of CPB or Comsat, might be necessary to control CATV systems, but not own or operate them. NAEB strongly supported continued emphasis on broadcast coverage of rural and remote areas although federal subsidies might make CATV services available to these areas as well. Finally, NAEB expressed a feeling that the Commission must play a primary role in cable regulation to insure fair coverage.

Many participants, except the pro-broadcasting/anti-cable faction, noted the potential of the broadband capability of cable. Many expressed a feeling that education could benefit greatly from the increased coverage and services that could be offered by cable.

In response to suggestions that switched cable networks be encouraged, AT&T stated that its 1 MHz bandwidth Picturephone service should be adequate to meet broad-bandwidth communications needs. AT&T maintained that CATV technology was not sufficiently advanced to permit such development, but that it was already installing Picturephone facilities.

JCET supported CATV educational reservations, expressing a concern that non-TV services, such as CAI, might otherwise be lost on cable because facilities would not be available.

The First Report and Order issued by the Commission on October 14, 1969, set forth the Commission's position on the cablecasting problem. The FCC felt that the diversity that cablecasting would develop was worth whatever small impact it might have on broadcasting. The Commission ordered systems with more than 3500 subscribers to begin cablecasting by April, 1971, and it also permitted common carrier and some limited advertising operations by CATV systems.

NAEB was forced to defend its pleas for educational reservations against attacks from cable interest. Led by Jerrold Electronics, the CATV industry had asked to be allowed to find its proper role before assigning any educational priorities. NAEB opposed the cablecasting request, fearing harm to existing services. According to NAEB, the absolute necessity for equal opportunities of access (a problem also of concern to the Department of Justice and the ACLU) could only be met if non-commercial guarantees were made in coordination with local needs. NAEB's opposition to the First Report and Order centered around its fear that experimentation might replace planning. The concept of the cable operator being the program originator was contrary to the need for program diversity, and concern was also expressed about the possible presence of commercials adjacent to, or even within, educational programming. Both NAEB and Vincennes University indicated support for educational station ownership of CATV systems, despite a Commission and Department of Justice desire to extend diversity to ownership, as expressed in the original Second Report and Order.

A Memorandum Opinion and Order on June 24, 1970, responded to NAEB's local coordination concerns by noting that the FCC did not believe that local cablecasters would engage in educational cablecasting without close consultation with local educators. In the Commission's view, no action would be necessary unless experience later indicated that a real problem existed. In response to the other issues raised in this Docket, the Commission issued a Second Notice of Further Rulemaking on June 24, 1970, splitting this proceeding off into Docket 18397A.

In the Matter of	)	
Amendment of Part 74, Subpart K of the Commissions Rules and Regulations Relative to Community Antenna Television Systems; an Inquiry into the Development of Communications Technology and Services to Formulate Regulatory Policy and Rulemaking and/or Legislative Proposals.	)	Docket No. 18397A

Summary

Although originally intended to deal with specific issues, this became the broad CATV policy docket. Among the issues discussed were a "Public Dividend Plan" to benefit public broadcasting, and various proposals to solve the distant signal problem. Non-commercial ownership of CATV systems was also proposed (based on ownership diversity issues in Docket 18891). The Commission has used this Docket to form the basis of its new CATV rules.

Major Participants

Department of HEW (Lewis Butler, Al Horley): Supported Public Dividend concept. Public cable channel access must be assured, but not necessarily through reservations plan. Development of cable potentials should be encouraged.

Office of Economic Opportunity: Supported general development of CATV because of potentials. Suggested that 100% CATV coverage be encouraged.

Department of Justice: -- Opposed Public Dividend fee as discriminatory. Congress should supply appropriations for public broadcasting support. Position supported by many CATV and broadcast groups.

AMST

NCTA

NAEB: Supported Public Dividend, but not as a final, permanent solution to ETV funding problems. NAEB strongly supported non-commercial ownership of cable systems, and opposed commercial cable operator programming of local channels. Local educational authorities might be able to request distant signal protection for local ETV stations. Regulation of cable should be at Federal level and it should be strict.

JCET: Supported Public Dividend, requesting that all cable system be subject to some public broadcasting support fee. The emphasis should be on local, not distant, ETV.

NEA: Supported use of Public Dividend funds for public cable facilities and programming. Suggested that local public cable corporation might best operate CATV systems. NEA continued to support a 20% channel capacity reservation and two-way capability.

Ford Foundation: Urged preferential treatment for non-commercial franchise applicants as a good way to guarantee public access. Funded some independent research into the impact of cable on existing broadcast structure.

CPB: Supported Public Dividend plan. Noting that it would allocate Public Dividend money to cable programming, CPB defended the proposal against charges that it discriminated against CATV systems. CPB emphasized that public broadcasting could not help benefiting from CATV.

Docket 18397A

SCOPE: Supported alternative to Public Dividend plan, channeling half the funds through CPB and half through USOE for public cable facilities.

Black Efforts for Soul in Television: Urged inner-city programming and minority access to CATV. Funds are needed for public and minority programming, but cable should not be the only source.

E. Lovell Dyett and Christopher L. Faegre: Individuals making comment in Docket. Public Dividend funds should be used to bring "public TV" to the people by providing less cultural, "highbrow" programming. Urged non-commercial operation of CATV.

Rand Corporation: Conducted independent study of CATV. There is a need for both broadcast and cable, and one will not necessarily replace the other. Local origination requires financial support.

City of New York; Opposed 5% Public Dividend fee at the expense of municipal franchise fees.

New York State Regents: Urged State regulation of cable capacity.

National Association of Broadcasters: Opposed Public Dividend plan as discriminatory.

National Cable Television Association: Opposed Public Dividend fee as discriminatory. Channel use should be dictated by actual demand, but voluntary cooperation would guarantee educational access. Preferred little regulation, but Federal regulation would be better than State or local regulation.

Midwest Video: Representative of many CATV operators. Large CATV operator. Opposed Public Dividend fee. Tax supported appropriation should be used to support ETV.

Hughes Aircraft: Major CATV operator interest. Total fees placed on CATV, including Public Dividend and franchise, should be limited to avoid unfair burden. Commercial broadcasters should also pay support to ETV.

In the Matter of)

Amendment of Part 74, Subpart) Docket No. 18397A
K of the Commissions Rules and)
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The Second Notice of Further Rulemaking of June 24, 1970, in Docket No. 18397A was issued to establish a proceeding to deal with distant signal and channel utilization problems. Docket 18397A is a continuation of Docket 18397 using different rules proposed in the Further Rulemaking as a new point for discussion.

Among the proposals under Docket 18397A were several designed to aid independent UHF and ETV stations. The important benefit to ETV was stated in the proposed "Public Dividend Plan". CATV systems in the top 100 markets desiring to carry the signals of distan stations (stations more than 35 miles away) would be required to pay 5% of gross subscriber revenues quarterly to the Corporation for Public Broadcasting. Half of the money, estimated to amount to as much as $30 million per year, would be used by CPB for the PBS network The other half of the money would go to local and regional ETV authorities.

Another potentially significant proposal would require CATV systems to replace commercials broadcast by distant stations with local commercials. A similar rule might apply to ETV, with a CATV operator required to replace distant ETV fund appeals with appeals for the local ETV. No change, however, was proposed in the rule on carriage of distant ETV programs; it would still be the responsibility of the local station to request protection.

Distant signals are of great importance to the cable industry since without them, CATV groups have argued, it would be difficult for CATV to successfully operate in urban markets adequately served by local broadcast signals. The broadcasters, on the other hand, maintain that there is no need for cable in urban areas, and that cable should only be permitted where local broadcast signals cannot provide a minimal amount of high quality service. The principal of the so-called "wired city" is opposed by broadcasters and others because cable is not delivered without direct charge as is broadcast television.

The SCOPE organization offered an alternative to the distribution of funds suggested by the Commission. SCOPE proposed that half the money go to CPB and half be funneled through the U.S. Office of Education to the states and local school systems for use by schools in producing local ITV programming for cable distribution. A later modification included the possibility of financial contribution to non-public schools and universities. The alternative was suggested becasue of considerable discussion about the differences between educational (public) and instructional television. In order to meet the acknowledged need for both, SCOPE made its proposal to help both ETV and ITV.

A number of universities and local school systems expressed support for the SCOPE alternative proposal. Some state organizations, such as the New York State Educational Communications Association, also supported the SCOPE variation.

The City of New York, however, noted that the 5% fee, plus normal business taxes, would make it difficult for municipalities to impose a franchise fee of more than 2% (which was the FCC proposed limit) on the CATV operation.

New York questioned the priorities of public broadcasting needs being placed over the financial needs of the cities.

A large cable operator, Midwest Video, questioned the FCC's authority to impose the burden of ETV support on CATV. Midwest Video asserted that the general public should supply support through taxes and Congressional appropriations. This view was taken by many other cable operators.

Under the sponsorship of the Ford Foundation and the John and Mary Markle Foundation, the Rand Corporation prepared a series of reports examining the potential impact of CATV and local origination of broadcasting, particularly UHF. The reports concluded that broadcasting and CATV were not mutually exclusive and that it was possible that one could strengthen the other. Local origination was promising in terms of bringing local television to small communities, but it required a wide financial base to be successful.

Two independent observers, E. Lovell Dyett and Christopher L. Faegre, suggested that the 5% levy on CATV systems be used to reorient ETV away from "highbrow" cultural programming to programming for an inner-city, disadvantaged audience. They also strongly recommended that non-commercial interests operate CATV systems, or that the CATV owners function with educational partners to insure services to educational and non-commercial interests.

Use of the "Public Dividend" to support inner-city programming was supported by Black Efforts for Soul in Television (BEST). It noted that with CATV and adequate programming funds, a diverse amount of needed programming could be provided. BEST also opposed placing the burden of support on CATV alone.

Storer Broadcasting opposed the "Public Dividend" concept on the grounds that the Public Broadcasting Act of 1967 amendments to the Communications Act gave Congress the authority to provide funds to public broadcasting. Storer felt that this was not properly the FCC's role.

Hughes Aircraft Company, with a substantial interest in a major CATV company, TelePrompTer, supported the 5% Public Dividend provided certain precautions were taken. The total tax and fee burden placed on CATV, other than standard corporate taxes, should be limited to 10% of gross revenues. Hughes also contended that commercial broadcasters, VHF in particular, should share in the support of ETV.

The Eastern Educational Network addressed the distant signal problem by suggesting that local educational agencies be responsible for protecting local ETV stations. In any event, it felt that the burden should not rest upon the ETV station. EEN also commented that the substitution idea seemed awkward and impractical and was therefore insufficient protection.

JCET emphasized that the importation of distant public television stations was secondary to local needs and educational authorities. As to the "Public Dividend Plan", JCET suggested that it be applied to all systems in all markets. Although it agreed that there was a need to insure that funds got down to the local level, JCET did not suggest a plan for distributing the money.

NAEB's response to the "Public Dividend" proposal was that it did not constitute the long-term ETV financing solution that it felt was needed. NAEB preferred Congressional action to solve the ETV financing problem on a continuing basis. NAEB supported the EEN proposal that local educational authorities be responsible for ETV protection. It suggested that the CATV system be required to obtain permission on a "go-no go" basis before carrying a distant ETV signal. NAEB did not indicate any enthusiasm for the fund appeal substitution idea. NAEB continued support for its priority plan (expressed in connection with Docket 18397) and suggested that 20-50% of cable capacity might be an appropriate reservation for ETV.

NAEB also supported local ETV ownership of CATV systems and the Federal creation of a national cable grid interconnection system.

NEA supported a 20% system reservation with a minimum system capacity of 20-24 channels. While supporting the "Public Dividend" concept, NEA suggested that all of the money be used for public cable facilities and programming. NEA suggested 25% of the "Public Dividend" funds be allocated to the U. S. Office of Education for CATV facility grants, with the remainder being devoted to instructional and public programming on cable.

CPB indicated that, if the funds were channeled through it, all of the funds would be used for public TV and FM radio channels over CATV systems. By limiting utilization of the Public Dividend money to CATV, no discriminating burden would exist.

The Department of Justice, however, took the position that any fee placed on CATV to support ETV and ITV activities would be discriminatory. If additional funds were necessary, they should be appropriated by Congress.

This position was taken by many other groups, including the National Cable Television Association, the Association of Maximum Service Telecasters, and the National Association of Broadcasters. NAB took a suggestion from the Carnegie Commission on Educational Television and proposed the possibility of an excise tax on television receivers as a more equitable solution to ETV financing.

Al Horley of the Office of Telecommunications of the Department of Health, Education and Welfare indicated HEW's agreement that the potential benefits of CATV outweighed possible adverse effects on the existing TV structure. General support was expressed for the public dividend plan and public channels on CATV systems.

The West Virginia Educational Broadcasting Authority emphasized its desire for maximum local protection of its stations. It proposed that Public Dividend funds be distributed one-half to CPB and one-half to the local or State ETV authority. If a system could not carry any ETV stations without bringing in distant signals, and if the 5% charge would economically prevent the carriage of distant signals, West Virginia would prefer to have the ETV station carried without the 5% income.

The Office of Economic Opportunity noted the potential benefits of CATV to the poor and disadvantaged. OEO emphasized planning to accommodate future capabilities and supported whateve measures necessary to achieve 100% educational coverage.

The Corporation for Public Broadcasting stated its position that CATV was neither competitive with nor harmful to public television. In fact, the wider coverage and additional channels provided by cable could prove to be a great stimulant to ETV growth. Whether the 5% Public Dividend provided funds for cable programming or not, some room on the cable would be necessary for the development and utilization of public cable channels.

The Association of Maximum Service Telecasters observed that educators had not agreed on how to distribute the Public Dividend funds. It raised questions about the legality of the 5% fee and doubted that it would survive an almost certain court test.

As a part of this overall CATV proceeding, NAEB summarized its position in three other related Dockets pertaining to specifi CATV issues. In Docket 18894 (CATV Technical Standards), NAEB strongly advocated a conference to allocate cable-frequencies for various broadcast and non-broadcast services, commercial and non-commercial. This conference would also determine priorities of service and two-way standards and procedures. Local, community-type origination centers proposed by the FCC would be useful, bu until CATV is in a more secure period of its development, it shou merely be required to ascertain the needs and interests of the community in the same manner as broadcasters, and to strive to meet these needs to the best of its ability. A minimum of 20 channels (preferably 40) should be required in metropolitan areas and a minimum of 12 channels everywhere else. Cable systems NAEB felt, should be required to expand channel capacity as rapidly as technology permits, and consideration should also be given to standards that would permit high resolution television systems using channels wider than 6 MHz.

In Docket 18891 (the cross-ownership prohibition), NAEB requested that non-commercial broadcast stations not be prohibited from owning CATV systems in their local coverage area. NAEB felt that the concentration of ownership that the proposed rule sought to eliminate did not apply to non-commercial organizations and that the public would benefit from the stronger local ETV organization that would result.

Finally, in Docket 18892 (Federal, State and Local Relationship and Regulations), NAEB strongly called for Federal licensing of CATV systems to guarantee uniformity of cable communications based upon a a Federally-created national cable grid. Local regulation should follow Federal guidelines, particularly with regard to ownership criteria and minimum standards of service. In all cases, regulation should encourage a uniform cable policy providing maximum commercial services on a local, statewide, regional and national basis.

The National Cable Television Association claimed that there was little support for the 5% Public Dividend Plan. CATV channel capacity should be dictated by actual demand, and, consequently, the dedication of channels for educational and public purposes would be premature.

The National Education Association strongly supported the requirement that CATV systems provide two-way capability since it would be extremely useful for interactive instruction. NEA also endorsed the Ford Foundation proposal that non-commercial, non-profit applicants be given priority in granting CATV franchises, all other factors being equal.

Docket 18397A

Because of great interest in the CATV issue, the Commission ordered public hearings to be held in March, 1971. Unlike past public proceedings of this type in which various spokesmen made a statement and were questioned by members of the Commission, an experiment was tried. A series of panel discussions was scheduled, with each panel being specifically directed towards one of the various CATV dockets. Those individuals or groups wishing to comment who could not be accommodated by the panels would receive an opportunity to make a presentation in the usual manner. The panel hearings received national attention and were broadcast live by the PublicBroadcasting Service.

The first of the panel discussions was devoted to the general potentials of CATV. Among the participants were John Macy, Jr., President of the Corporation for Public Broadcasting; McGeorge Bundy, President of the Ford Foundation; Irving Kahn, President of TelePrompTer; and Paul Comstock, an official of the National Association of Broadcasters. There was general agreement that CATV offered vast potential services. Concern was expressed about insuring access to non-mass interests to provide minority and limited appeal programming. Mr. Macy, for example, saw CATV as the means for finishing the job started by Public Broadcasting, which has hampered by channel and time limitations.

The next three panels dealt with commercial issues of little interest to educators. Panel Number Five, however, was devoted primarily to the question of non-commercial station ownership of CATV systems and whether such organizations should receive preference in the granting of franchises. Among those participating in this panel were Donal Taverner, then President of NCTA (with extensive personal public broadcasting background); William Harley, President of NAEB; Stuart Sucherman of the Office of Public Broadcasting in the Ford Foundation; William Wright of Black Efforts for Soul in Television (BEST); Joan Ganz Cooney, President of the

Children's Television Workshop; and James Day, president of the Educational Broadcasting Corporation (NET). Mr. Sucherman re-emphasized the Ford Foundation's desire to see some non-profit CATV operators in order to provide competition and program diversity. The prime advantage of this approach is that any "profits" would be used to finance local programming. The Ford Foundation indicated that the Commission could encourage non-profit CATV operations by requiring franchising municipalities to give preference to non-profit applicants (provided all other factors were equal). Edward P. Curtis, Chairman of the Rochester Area Educational Television Association, supported this position, noting that the record of privately owned CATV systems frequently was not very good. James Day of NET also emphasized the recycling of profits into services to the public. He noted that many additional channels were necessary to provide all the services discussed by the public and that the priority should be placed on local programming rather than distant stations. He contended that CATV operators would find the audience appeal of local programming very high.

William Harley placed a slightly different emphasis on access, which NAEB considered to be most important. He felt that in order to provide sufficient room for independent and educational programming the CATV owner (assuming the system is privately owned) should not be permitted to program channels.

Two participants concerned with minority interests, William Wright of BEST and Miss Sklover of a Bedford-Stuyvesant community group, noted the almost total lack of minority ownership or control of the media. Miss Sklover noted that while the capital outlays required to install cable systems virtually dictated large, non-minority owners, it was not impossible or unreasonable to require that a portion of the cable capacity, perhaps 33%, be reserved for public use under local community control. She suggested a local community cable board, with all local interests represented, to administer the use of public channels. Advertising could be used to help finance programming, but only if the advertiser has no control over program content.

Donald Taverner, speaking for the cable industry, commented that non-profit systems might have difficulty in providing enough capital to construct a system capable of making maximum utilization of cable technology. NCTA particularly opposed the ownership of CATV systems by municipalities or governmental units. Taverner indicated that if access were guaranteed, a position which had full NCTA support, the question of ownership would be less critical.

Both the other panel members and members of the Commission repeatedly questioned Taverner about open access and sufficient channels being available. The Commission brought up the idea of requiring systems to add channels as necessary to meet public demand (within certain technical limitations). Taverner continued to assure everyone that both the access and channel capacity problems were not being ignored by most cable operators.

(It is interesting to note that several months after these hearings, Taverner was forced to resign his position with NCTA. He is now President of the Washington Educational Television Association-WETA-TV and Radio.)

The sixth panel was concerned with the regulatory relationship between Federal, State and local bodies. Despite some support for State regulation from the State of New York, general support seemed to be for a mixture of Federal and local regulation. Primarily, the FCC would set programming and technical standards, and administer them, while the local jurisdiction would handle franchise and local service requirements.

The seventh panel dealt with the copyright problem as it applied to CATV. Although a number of problems and various solutions were discussed, the resolution of the current copyright dilemma, which may have enormous impact on the economics of commercial CATV programming, is largely up to Congress which has been working on the problem for a number of years. It is likely, however, that CATV systems will have to pay a license fee to copyright holders (and perhaps a fee to performers as well) for the right to retransmit their programs.

The final panel went back to the original topic of CATV potential. This panel devoted much of its time to the program diversity, both commercial and non-commercial, that could be developed as a result of cable systems.

The Ford Foundation used time in the individual oral arguments to further its case for non-profit CATV ownership and to urge the Commission not to neglect local programming for minority groups.

Many of the cable interests testifying expressed a desire to see Federal pre-emption of CATV regulation. This was desired in order to insure uniformity of standards and requirements. The cable groups also expressed a hope that the degree of regulation would be kept to a minimum to allow cable to develop freely.

Lewis Butler, accompanied by Al Horley, represented the Department of Health, Education and Welfare before the Commission. Noting that the Department had been funding several CATV programming demonstrations projects, they expressed a deep interest in the educational and social potential of cable. Certain techniques, such as the open university concept, require the use of low-cost, universally-available, broadband communications services that cable has the potential to provide. Eventual CATV system interconnection, particularly through statellite systems, would increase the flexibility and usefulness of cable. HEW's chief concern was the availability and accessibility of cable channels for public uses. While a percentage reservation for non-commercial use might be useful, it would not be necessary that specific channels be reserved as long as there was some assurance that the channels would be available when needed.

Harold Wigren appeared for the National Education Association with copies of the newly published NEA publication, Schools and Cable Television, which noted many of the educational implications of CATV. Wigren commented that unless a minimum of 20% of system capacity was automatically made available to education, scheduling problems similar to those plaguing broadcast ITV would soon cause disillusionment. He expressed a need for guaranteed access, free connection of the cable to each school, and a two-way capability. While recognizing that free service could place a heavy burden on systems, NEA was concerned that the costs of CATV utilization could go too high without controls. NEA continued to hold the position that a fourth of the 5% Public Dividend should go to the U. S. Office of Education for allocation under the Educational Television Facilities program for cable origination facilities, and that the remainder of the money should go directly to local communities in the form of programming grants. While all systems should be required to pay some fee, smaller markets might have to pay a smaller percentage in order to remain economically viable. NEA suggested that a good solution to the ownership problem might be local public cable corporations independent of any other non-commercial or municipal operator. This non-profit organization would not necessarily have to be an ETV operator in order to provide program diversity.

NCTA noted that many problems are associated with the ETV reservations, and suggested that voluntary action on the part of cable operators might best solve the need for channels. Commission action should be taken only against operators who refuse to cooperate in meeting public needs.

In a joint appearance, NAEB and JCET emphasized minority oriented access. According to JCET Executive Secretary Frank Norwood, the most important thing was "access to those channels when we are ready to use them." Access should be easily available for all potential cable services, such as the privacy channels possible using certain midband frequencies between channels 6 and 7.

Representatives of the New York State Regents indicated the State's intention to establish a Commission on Cable Television to provide technical, channel capacity, and access standards. The Regents would coordinate informational and instructional services with the Cable Commission and express State Cable policy to the FCC. A Regents policy group would be organized to identify educational communication needs.

In response to some interest on the part of Commissioner Nicholas Johnson, there was a discussion of the use of very low-cost, half-inch videotape for community access purposes. Local community programming could be easily produced using inexpensive "backpack" portable recorders, but an exception would have to be made in the technical rules proposed for CATV.

Following the hearings, the Commission announced that it would devote a maximum amount of its time to a final resolution of CATV regulation. In response to great Congressional interest, the Commission announced that no final action would be taken without giving Congress an opportunity to react. The Commission was also aware of attention being devoted to CATV policy issues by the White House Office of Telecommunications Policy.

Consequently, on August 5, 1971, the Commission sent a letter to the Chairman of the Senate and House Commerce Committees and the Chairmen of their respective Communications Subcommittees, indicating the nature of the rules the Commission intended to adopt for CATV. This letter of intent, issued outside the docket process, indicated the Commission's desire to formulate final CATV regulations without waiting until Congress resolved the closely related copyright problem.

The Commission did note, however, that certain problems, such as program exclusivity, would have to wait until the copyright situation could be clarified. The areas in which the Commission reached policy decisions were (1) television broadcast signal carriage, (2) access to, and use of non-broadcast cable channels, including minimum channel capacity, (3) technical standards and (4) appropriate division of regulatory jurisdiction between the Federal and State-local levels of government.

A timetable was established for the issuance of specific rules by the end of 1971 with an effective date of March 1, 1972, assuming no legislative action is taken.

In proposing rules for television broadcast signal carriage, the Commission noted that several proposals covered in Dockets 18397 and 18397A, including commercial substitution, were not desirable and/or workable. The Commission desired a solution that would encourage the growth of cable systems, particularly into urban areas, without damaging the existing television broadcast structure.

The Commission organized signals into three categories (1) mandatory carriage---signals that must be carried; (2) minimum service---the minimum number of signals (depending upon market size) that a system may carry; and (3) additional service---signals that some systems may be permitted to carry in addition to the first two categories.

The rules will vary depending on whether a system is in a top-50 television market, in a market between 51 and 100, or not a television market at all. Each market, whose rank will be determined by commercial audience research figures, will consist of a 35-mile radius from a standard reference point in the main community.

The mandatory carriage rules will state that "all cable systems must carry the signals of all stations licensed to communities within 35 miles of the cable system's community."

The rules will also require the cable system to carry any non-local market station that had "significant over-the-air viewing in the cable system's community". Specific standards were included to determine whether a station did have a significant audience.

Minimum service rules for cable systems located in the top-50 television markets will require three full network stations and three independent stations. Systems in a market between 51 and 100 need only carry two independents, and those in a below-100 market system will only be required to carry one independent station. All cable systems must carry three full-time network stations providing carriage of all commercial network programming. Distant signals may be used, if necessary, to provide minimum service.

Additional service signals will be permitted only to systems in the top-100 markets, and would be limited to two signals beyond those required under mandatory carriage. However, any distant signals used to provide minimum coverage would be also counted as additional signals. Systems in markets below the top-100 would not be permitted to carry distant signals. Systems carrying distant signals would have to give first priority to a UHF independent station within 200 miles. The other signal could be brought in from anywhere.

The Commission recognized the concern of educational interests for protection of local and potential educational stations. It also recognized the expressed desire of education interests to lighten the protection burden previously placed on the education station. Consequently, the Commission issued the following rules:

> "A cable system must carry educational stations within 35 miles and, on request, those that provide a predicted Grade B contour over the cable system's community. The Commission will attempt to settle disputes involving

> educational stations on the basis of a showing from the objecting party and the response of the cable system involved. While all objections to educational station carriage will be considered, we would not anticipate precluding carriage of tax-supported stations from the same state as the cable system. In order to insure that educational interests have adequate notice of proposed importation, we would retain our requirement that the cable system serve notice of its intention to carry any educational stations upon the local school superintendent, all educational stations placing a predicted Grade B contour over the cable system's community, and any local or state educational television authority. Finally, we recognize that educational stations are unlikely to develop in some areas and that cable carriage of distant educational signals is unlikely to have any appreciable impact on commercial broadcast stations. Consequently, we will allow a cable system to carry any number of educational signals, local or distant, in the absence of objection."

The Commission will issue special rules, and possible legislative concerns, governing the carriage of sports events not broadcast locally. It also stated that existing systems would be permitted to carry whatever signals they had already been carrying under a "grandfather clause."

The non-broadcast channel rules (access) are part of what th Commission considers to be the price paid for the carriage of distant signals. The Commission stated that "we emphasize that the cable operator cannot accept the distant or overlapping signals that will be made available without also accepting the obligation to provide for substantial non-broadcast bandwidth.

The two are integrally linked in the public interest" (emphasis supplied by the Commission). The Commission indicated its feeling that non-broadcast service would eventually dominate CATV and that systems should be planned to meet future needs.

In order to avoid placing too heavy a burden upon CATV systems, only systems in the top-100 market areas would be required to meet a 20-channel minimal requirement. Also, becuase of the relationship between distant signals and the non-broadcast obligation, only stations in the top-100 market areas carrying distant signals would be required to provide the following non-broadcast services.

One channel each should be dedicated for general non-commercia public access, educational use, and state and local governmental us These channels should be available free for five years after the completion of system construction. Production costs for programs longer than five minutes would be the responsibility of the channel user.

Any additional channel capacity available, or any of the above channels not currently in use (subject, of course, to immediate pre-emption by the dedicated user), would be available for commercial lease. To assure adequate channel capacity at all times, the Commission will require systems to add a channel within six months whenever all channels are in use for 80% of the time during any three-hour period on 80% of the weekdays for six consecutive weeks. This somewhat experimental "N+1" concept should guaranteed access to all users.

The Commission also indicated that all systems should have two-way capability built in. The Commission indicated that serious problems could develop in regulating non-broadcast programming if dual federal-local regulation was permitted. Therefore, the Commission will not permit local regulation of access channels, except for the governmental channel. More importantly, the

Commission stated that "aside from channels for government uses, we do not believe that local entities should be permitted to require that other channels be assigned for particular use." The Commission did not rule out some franchise requirements on an experimental basis with Commission approval, however. Exis ing franchise requirements would also have to be honored. The Commission will limit regulation of the programming of the public access channel to a requirement that they be assigned on a non-discriminatory, first-come, first-served basis without any censorship by the cable operator. However, advertising (includin political advertising), lotteries, and obscene or indecent materi will be banned. The cable operator must provide a minimal amount of production facilities for public use.

In order to encourage experimentation by the cable operator and the public, CATV technical standards will not apply to non-broadcast television services. This will allow the use of very low-cost equipment available to more people.

While rejecting Federal licensing of cable systems, at least at this time, the Commission set certain minimum standards for local franchises. These standards apply to the legal and financial qualifications of the applicant and require a construction timetable to guarantee quick completion and operation of the syst The Commission recommended a maximum franchise period of fifteen years with renewal permitted. Special circumstances, such as fre wiring of inner city areas, might justify a longer franchise. Franchise fees should not exceed three percent without specific justification showing that the fee will not interfere with the operator's financial ability to meet federal requirements.

Finally, the Commission's letter indicated that there would be additional proceedings to resolve certain issues before the ne rules became effective. These issued include local ETV ownership of CATV systems. Completely new proceedings will be instituted t formulate more specific policy concerning public access channels, including rates, to encourage and insure the full use of the channels. Other new proceedings will discuss federal/state/local regulatory relationships and the carriage of radio station signals.

The Commission ended by observing that CATV is not a fully developed technology and possible new services undoubtedly have yet to be identified. Regulation must leave CATV some room to develop and regulators must be prepared to adopt new rules to accommodate new services or needs.

Educational Implications

Dockets 18397 and 18397A

The dockets dealing with cable television (CATV) issues hold great potential for education since CATV may eventually revolutionize the entire communications structure of the nation. (At the other end of the spectrum, however, it is possible that CATV may be limited to providing supplemental service in areas currently receiving inadequate broadcast television service.)

One of the key issues for educators in these two CATV dockets was a proposal that educational institutions and organizations be encouraged to own and/or operate CATV systems. Educational ownership of a CATV system would virtually guarantee that local educational interests would receive a fair share of the available CATV capacity.

Another important proposal involved a special fee imposed upon CATV systems in return for the right to carry distant broadcast signals. This so-called "public dividend", amounting to about 5% of a system's gross revenue, would be used to support public programming and facilities.

The regulations that will govern CATV have not yet been fully developed. It appears, however, in preliminary indications from the FCC that a certain amount of educational and public service requirements will be placed on CATV systems although the "public dividend" proposal appears less likely to pass. The Commission's proposed rules set forth specifically the minimum requirements for systems in various sizes of communities.

Although there was some question of who would regulate CATV, the FCC has, to a large extent, pre-empted most CATV regulations. Local communities have previously had the option of making local requirements a part of any CATV franchise agreements and local school systems have frequently benefited from these requirements. Thus, educational users or potential users of CATV must look to the FCC for regulatory aid to achieve desired services.

DOMESTIC SATELLITES

In the Matter of)
Establishment of Domestic) Docket 16495
Communication-Satellite)
Facilities by Non-Govern-)
mental Entities.)

Summary

Communications Satellites theoretically eliminate any distance-related factor involved in the cost of communications and permit transmission at potentially great savings over terrestrial rates. Because of the large role satellites are expected to play in future domestic communications, interest in domestic satellite operations has been high, both on the part of potential operators and users. However, due to orbital and frequency limitations, it is necessary to regulate the number and nature of systems that can be approved. An additional factor in the domestic satellite decision is service to education and public braodcasting, which educational interests have requested on a free basis.

Major Participants

Department of HEW: Expressed early general support for non-governmental, specialized satellite systems similar to those proposed by ABC and the Ford Foundarion.

Department of Justice: Strongly supported competitive satellite systems and opposed any AT&T control of satellites. AT&T should purchase needed satellite services from other operators.

President's Task Force on Communications Policy: Johnson administration study group. Supported Comsat pilot program to test domestic satellite techniques.

White House (Peter Flanigan): Nixon administration. Strongly supported competition in satellite services. The White House urged the Commission to reach a decision as soon as possible so that domestic satellite services could become available promptly.

American Broadcasting Companies, Inc. (ABC): Commercial network operation. First to propose a specialized domestic satellite system to provide network television distribution. Opposed Comsat pilot program in favor of NASA experimentation.

Ford Foundation: Proposed non-profit television satellite system to serve commercial, educational, and instructional needs. Any profits would be used to support educational programming under a "Public Dividend" plan. Supported experimentation by NASA, rather than Comsat. After the creation of CPB, the Ford Foundation took a less active role in these proceedings.

General Electric: Supported concept of switched, multiple-access digital and video systems using satellites.

Post Office Department: Opposed certain aspects of GE proposal which would compete with U.S. Mail.

Comsat: Operator of international satellite system. Originally opposed any competition in domestic satellite area and opposed FCC authority to regulate domestic satellites. Applied for authority to operate high capacity, multi-purpose domestic system which would meet the needs of all domestic users except AT&T, but including television distribution. Opposed free service for public broadcasting. Comsat also proposed to manage an extensive pilot system to study satellite techniques.

AT&T: Major terrestrial common carrier. Applied for authority to operate a system to meet its anticipated future needs, including television distribution service. AT&T anticipates no reductions over existing rates because of satellite operations. Opposed Ford "Public Dividend" concept. The space segment (satellites) for the AT&T system would be supplied by Comsat.

Western Union: Terrestrial common carrier. Applied for authority to operate a non-exclusive, multi-purpose system providing service to many users, including television networks. Opposed AT&T operation of satellite services. Opposed Ford "Public Dividend" concept, preferring to pass cost savings on to users.

GT&E Service Company: Terrestrial common carrier. Applied for authority to operate a non-exclusive, multi-purpose system to meet needs of its operating companies. Proposed some service to ETV based on Docket 18316 guidelines, but some free service might be available on a pre-emptive basis. Opposed any limitation on satellite operation by AT&T or any other existing carrier. Space segment supplied by Hughes Aircraft.

Hughes Aircraft Company: Applied for authority to operate a system concentrating on delivery of programming to CATV systems. Some free channels would be available for PBS with free access to all earth stations. Opposed Ford "Public Dividend" since CATV growth stimulated by satellite program distribution would benefit ETV. Extensive receive-only earth station network would be supplied jointly with TelePrompTer Corporation and other CATV system operators.

MCI Lockheed Satellite Corporation: Joint venture of new specialized common carrier and aerospace manufacturer. Applied for authority to construct and operate a non-exclusive, multi-purpose, high capacity system. MCI Lockheed devoted special attention to educational needs, and proposed five free channels for educational use for the first five years of the system's operation.

RCA Global Communications and RCA Alaska Communications: International and Alaska common carrier. Applied for authority to construct and operate multi-purpose system. Service to ETV would be supplied on a reduced rate basis. Proposed special attention to Alaska satellite needs, including education, on an exclusive basis.

Western Tele-Communications, Inc.: Western U.S. common carrier. Applied for authority to construct and operate a multi-purpose moderate capacity system. Reduced rate service would be provided to all television program distribution , including public broadcasting. North American Rockwell would provide the space segment.

Fairchild Hiller: Applied for authority to construct and operate a high capacity, multi-purpose system on an exclusive basis. Some free public television service would be provided along with additional potential educational services. Supported free educational service at the expense of commercial users.

Phoenix Satellite Corporation: Prototype of local station owned receive-only earth station supported by commercial networks and affiliates organizations. Full access and ownership opportunities would be provided to all local stations, including public broadcasters.

Commercial Networks: Supported user-owned earth stations, particularly of the receive-only type. Preferred Comsat, RCA, and/or Western Union proposals as best meeting their transmission needs, including consideration for public broadcasting. Concerned with cost and flexibility of service.

U.S. Independent Telephone Association: Opposed non-common carrier ownership of earth stations.

CPB: Insisted upon free satellite service to public broadcasting as the public's return for its tax investment in satellite technology. CPB provided the Commission with its own evaluation of the adequacy of the various proposals, and indicated a concern about future needs. CPB endorsed competitive satellite systems and opposed any AT&T operation of domestic satellites.

NAEB: Supported reserved educational satellite services and free public broadcasting service. NAEB indicated a need for non-television educational satellite services.

JCET: Supported Ford proposals, but indicated a need for an examination of total educational satellite system needs.

NEA: Supported use of satellites for many instructional services, particularly to remote areas.

NET: Supported Ford proposals, but noted the need for additional ETV financing from many sources.

Representative Torbert H. McDonald: Chairman, House Subcommittee on Communications and Power. Supported free public broadcasting service. Concerned about little attention to educational needs and access.

State of Alaska: Special concern because of unique communication needs, including instructional satellite services. Free educational satellite service is necessary to serve remote areas. RCA, Comsat, or Fairchild applicationswould best meet the State's communications needs.

National Citizen's Committee for Broadcasting: Active as a public advocate on broadcast issues. Supported original Ford proposals and opposed AT&T operation of satellite systems. Devoted attention to educational potentials.

National Cable Television Association: Supported delivery of educational programming direct to CATV systems.

In the Matter of)

Establishment of Domestic) Docket No. 16495
Communication-Satellite)
Facilities by Non-Govern-)
mental Entities)

Communications satellites theoretically eliminate any distance-related factor involved in the cost of communications and permit either point-to-point or point-to-points (broadcast) transmission at what many consider to be great savings over terrestrial rates. Because of the large role satellites are expected to play in future domestic communications, interest in domestic satellite operations has been high, both on the part of potential operators and users. However, at this time, there is a limit to the number of satellites and channels that may be used to cover a specific geographic area, such as the United States.

The beginnings of the proceeding dealt with in Docket 16495 lie in two related events of the early and mid-1960's. The first was the enactment of the Communications Satellite Act of 1962 which established a publically owned corporation, the Communications Satellite Corporation (Comsat), as the owner and operator of America's contribution to the "global" communications satellite system (Intelsat). Comsat, however, was only authorized to sell its services to authorized common carriers for international communications.

The second action which set this proceeding into motion was an application, filed on September 21, 1965 by the American Broadcasting Companies, Inc. (ABC), to orbit a satellite system for the transmission of network television programming directly to local television stations. The ABC filing, prepared by Hughes Aircraft Company, basically proposed a privately owned, specialized satellite system in contrast to the multi-purpose common carrier system of the type being established by Intelsat and Comsat.

Comsat opposed the ABC proposal, claiming that the Communications Satellite Act of 1962 reserved all satellite functions, including domestic systems, to itself, Comsat maintained that it had the authority to provide ABC or any other potential user with the desired services. Because of related equipment licenses, however, the FCC would have to approve the total system.

In response to both ABC and Comsat, the Commission issued a Notice of Inquiry on March 1, 1966, to examine the legal, policy, and technical problems involved in the establishment of a domestic satellite system for non-governmental purposes. The basic questions that the Commission wished to resolve were whether the FCC had the authority to authorize a domestic system independent of Intelsat, and if so, what actions should be taken. The Commission also, at this time, rejected the ABC proposal without prejudice as premature.

With a few notable exceptions (Comsat, GT&E, and Western Union), support was expressed for the authority of the FCC to regulate domestic satellites under the Communications Satellite Act of 1962 and the basic Communications Act of 1934 (Section 303(g)) which encourages larger and more effective use of radio in the public interest. Proponents of the right of the FCC to regulate were the television networks, NAEB, several other potential satellite users (including AT&T) and the Department of Health, Education and Welfare. HEW indicated its support for non-governmental, non-common carrier satellite facilities in order to encourage program diversity and the maximum flexibility in reaching specialized groups. Guaranteed access was a question of early concern, particularly to educational interests.

The networks indicated their interest in operating a satellite system to meet their needs and those of educational television on a non-profit basis.

However, the existing common carrier groups indicated support for a domestic system, operated on a common carrier basis by the existing common carriers. They maintained that multi-purpose systems could most efficiently use the limited frequency and orbital space available to satellites while guaranteeing the expected benefits to all.

The Ford Foundaion submitted a model system for the transmission of both commercial and non-commercial television programming and proposed a Broadcaster's Non-Profit Satellite Service (BNS) to distribute six commercial channels, three primary and secondary instructional channels, one university television channel, and one educational television channel for each of the four U.S. time zones. The BNS profit was proposed to be 2/3 of the difference between actual capital and operating costs and existing AT&T rates. The excess income from its commercial users would be used to help support educational programming and facilities under a "Public Dividend Plan." The networks would still save a substantial amount of money while gaining increased flexibility. The Ford Foundation described this proposal as a model, rather than an application, and urged the Commission to take no action precluding it.

In commenting on the Ford proposal, AT&T, Comsat, and the Networks noted that new legislation would be needed to permit the free ETV service proposed. 1/ AT&T further questioned whether any savings would be realized with satellite operation.

Educational groups generally supported the Ford proposal as far as it went. NAEB drew an analogy to the original ETV

1/ This is dealt with under Docket 18316.

reservation and suggested the possibility of a satellite for exclusive educational use, including non-television services. NEA expressed a strong desire to see more instructional services than Ford had proposed. JCET preferred to emphasize total educational needs, as well, and expressed a desire to see any funds developed under the "Public Dividend Plan" applied to all kinds of educational telecommunications services. The National Educational Television and Radio Center (NET) supported the Ford proposal and expressed a need for a study of educational television financial problems.

The common carrier groups, meanwhile, continued their support for multi-purpose systems, while the non-carrier, user groups supported specialized, privately owned systems. Except for Comsat, there was general support for some satellite ownership diversity.

AT&T proposed a comprehensive system designed to meet its expected needs to 1980, including network television distribution service. Because of the size of the projected investment, $104 million to begin and $538 million by 1980, AT&T anticipated no savings over current rates. Any savings that might be realized from a reduced strain on terrestrial facilities should, AT&T felt, be passed on to the general using public, while support for ETV should come from general tax funds. AT&T suggested that Comsat provide the space segment of the system and lease the satellites to AT&T.

Comsat proposed a separate system to meet additional, non-AT&T needs. It noted that a satellite system would be economically feasible only if it serviced the TV networks.

Western Union also indicated its interest in the satellite field by filing for a system of its own to meet the needs of its expanding services. The Western Union proposal also included provisions for television program transmission.

The Ford Foundation modified its proposal to accommodate rapidly changing technology. The initial cost for the first phase would be $101.3 million with an annual expense of $28.8 million. The expanded second phase would cost $115.8 million with annual costs of $31.8 million, but as Ford noted, this total cost was only two or three times the current annual cost of television program transmission without service to ETV. Ford proposed that NASA conduct a demonstration project to develop operating experience and technology. All potential users of satellite program transmission would participate in the experiments, and actual public network operation could be conducted over the test facilities.

Comsat also proposed that it operate a pilot program. Some critics, however, claimed that this program would be the first phase of its proposed system.

Support for Comsat's proposed pilot project was received from AT&T and GT&E, while CBS and Western Union supported it provided it did not amount to a de facto position of dominance for Comsat. Other organizations, such as NBC, trucking, and aircraft user groups, felt additional discussion was necessary. ABC and Ford opposed the Comsat proposal outright, preferring to see more impartial NASA run the tests.

Although most of the interest had been directed toward satellite systems, there was some concern about the ownership of earth station facilities. Most of the system proposals included provisions for all necessary earth station facilities; but the affiliates' associations of the major networks filed a request that the ownership of earth stations, particularly of the receive-only type, be left open.

Considerable interest was expressed regarding the report of the President's Task Force on Communications Policy late in 1968 which endorsed Comsat's pilot proposal. The report recommended free public and instructional television interconnection and emphasized the need for close and careful coordination with the Intelsat system. A series of meetings and conferences was scheduled to coordinate satellite systems. [1]

Between 1967 and 1970, however, there was relatively little activity aside from a brief assortment of comments and replies, mostly centering around the questions of the pilot programs and of multi-purpose versus specialized systems.

The only major proposal filed during that period was a concept suggested by General Electric, which involved two services. First, a multiple-access digital system to handle record message and computer data traffic; and second, a multiple-access video system. The services would be flexible to permit switched types of services, including specialized, one-shot video networks. Educational networks could be easily established with the system. Essentially, GE proposed a satellite system comparable to the switched voice network, but economically available to all users. GE did not file an application to establish this system, but rather saw it as a possible use of satellite technology, concentrating on business usage of record communications (Telex-TWX types of services).

The general reaction of both commercial broadcaster and common carrier interests was that everything in the GE proposal could be accomplished by existing carriers in their proposed systems. The common carriers particularly saw this proposal as a bid by GE to become a common carrier. The Post Office Department expressed concern about a proposed "telemail" service that GE had considered to compete with the U.S. Mail. Educational interests made no comments on GE's proposal.

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[1] These meetings and conferences are discussed under Docket 18294.

Docket 16495

On January 23, 1970, Assistant to the President Peter Flanigan sent a memoradnum to the FCC expressing the White House's desire that the delay in the development of policy on satellites be ended. In contrast to the Johnson Administration Task Force, the Nixon Administration took the position that the public interest demanded competition in the domestic satellite field to encourage technological development and the lowest possible rates. The White House memo indicated that, subject to certain conditions,

> "...any financially qualified public or private entity including Government corporations, should be permitted to establish and operate domestic satellite facilities for its own needs; join with related entities in common-user, cooperative facilities; establish facilities for lease to prospective users; or establish facilities to be used in providing specialized carrier services on a competitive basis."

Within certain constraints,

> "...common carriers should be free to establish facilities for either switched public message or specialized services, or both."

The memo indicated that the only limiting criteria should be in terms of orbital and radio resources, and only systems that create a monopoly situation should be ruled out. All potential users, however, should be afforded an opportunity to participate in cooperative ventures, and specialized systems should be required to provide service to all users. The memo specifically noted that Comsat should be given equal, not preferential, treatment under the recommended guidelines.

In response to these recommendations, Comsat stock dropped sharply and irate stockholders flooded the Commission with angry letters supporting Comsat's role as the proper agency for operating the domestic satellite system.

At that time, Rep. Torbert H. McDonald, Chairman of the House Subcommittee on Communications and Power (which has House legislative authority in FCC matters) expressed his concern to the Commission that the White House memo made no mention of educational satellite needs or usage. He expressed his support for free service on an equal priority basis to be provided to public broadcasting. Chairman Dean Burch of the FCC assured Represenative McDonald that public television needs were not being ignored by the Commission.

The Commission, on March 20, 1970, adopted a massive Report and Order setting forth the status of the domestic satellite issue. In addition to thoroughly summarizing what had happened so far, the Commission reaffirmed its opinion that it had the authority to set domestic satellite policies, and indicated that it would start considering specific applications toward the goal of actually authorizing domestic satellite operations within the reasonable future.

Thus, the FCC invited the submission of applications, including certain specific technical data, for permission to operate a domestic satellite system. The Commission noted that it was under no obligation to approve any part of any of the applications. The Commission noted that its main criteria would come from its duty set forth in Section 1 of the Communications Act to regulate

> "...interstate commerce in Communication by wire and radio so as to make available, so far as possible, to all people of the United States a rapid, efficient, Nationwide wire and radio communication service with adequate facilities at reasonable charges."

The Commission requested that previously submitted applications be resubmitted to include all the required technical data. For each system, separate applications were required for each satellite, earth station (including receive-only facilities), and microwave interconnection stations. The Commission also s ated that it wanted (under Paragraph 34 (b) (1)) specific information about

> "...The terms and conditions under which satellite channels will be made available for non-commercial educational networks. We note that parties to this proceeding, such as Comsat and the ABC network, have proposed to provide satellite channels without charge for the interconnection of public and instructional broadcastings. We believe this to be in the public interest. Applicants proposing television or radio program transmission services should also address the possibilityof realizing a 'peoples' dividend' to provide some funds for programming, as suggested by the Ford Foundation.
>
> "(2) Applicants proposing multi-purpose or specialized systems should also discuss the terms and conditions under which satellite services will be made available for data and computer usage in meeting the instructional, educational, and administrative requirements of educational institutions."

In addition to comments about procedural issues, the FCC also requested comments on the role that AT&T should be permitted, or required, to take in any domestic satellite system. Particular attention was to be paid to the interrelationship of AT&T's considerable investment in existing terrestrial facilities to its willingness to establish innovative satellite services.

The other major question raised by the Commission involved access to satellite facilities, primarily what types of earth stations, interconnection and common carrier arrangements would work best? The principal question was whether the domestic system should follow the Intelsat lead in permitting only authorized common carriers to purchase services directly from the satellite operator or to permit users freedom to work out direct arrangements with satellite operators.

The first application was submitted by the Western Union Telegraph Company, which proposed a multi-purpose system with both video and message capabilities tied to its existing terrestrial facilities. Ten video channels would be provided three for each commercial network and one for public TV. Free PBS service would be provided if so ordered by the Commission. Free public TV could either be provided by charging commercial users higher rates or by using channels on the spare, backup satellite for public TV with a slight rise in earth station costs. Western Union also indicated its willingness to provide reduced rate data services for education if the Commission felt it desirable. However, Western Union also took the position that they would prefer to pass cost savings on to users rather than to help finance ETV.

Western Union felt that too many competitive systems would fragment the market and the effective competition would be impossible if AT&T were to operate a satellite system. Its position on the ownership of receive-only earth terminals was flexible depending upon the needs of broadcasters and other users.

AT&T also resubmitted its application, maintaining the use of satellites to be essential to its common carrier services. While AT&T did not foreclose the possiblity of other satellite operators, it said that it required a multi-purpose system integrated into its existing services. No tariff changes were contemplated. AT&T

proposed to use two satellites orbited by Comsat with a total of 24 transponders (each equivalent to one TV channel, 9-12,000 voice channels, or 35 megabits per second) per satellite. AT&T emphasized the flexibility of its system between digital and analog signals and noted that it was planning for future services such as Picturephone.

Comsat's resubmission noted that except for the facilities it planned to provide to AT&T, its high capacity system could best handle satellite needs by itself. While its space segment would be identical to that provided to AT&T (using three satellites, however), Comsat would provide an extensive earth station network. Comsat placed great emphasis on the economies of scale that could be gained through the single, large capacity system that it claimed could handle all anticipated peak volume. It proposed to provide fixed price TV network interconnection, and would provide services to PBS once the problem of earth station utilization costs were worked out. Educational data transmissions would also be available when a cost arrangement was made.

GT&E proposed a multi-purpose system using four earth stations tied in to Hughes Aircraft Company built satellites serving existing GT&E companies. GT&E, whose system would also be compatible with Comsat satellites opposed limiting AT&T or any other existing common carrier.

Hawaiian Telephone (a GT&E subsidiary) filed an application to construct and operate earth stations in Hawaii to connect with whatever satellite system might be approved. No discussion of ETV needs was included.

Hughes Aircraft Company's proposal emphasized satellite delivery of programming to CATV systems using receive-only earth stations built jointly with TelePrompTer Corporation. Although one channel would be offered to PBS on a pre-emptive basis, Hughes noted that if the CATV Public Dividend Proposal (Docket 18397A) were approved, ETV would benefit financially from the CATV growth that satellite programming distribution would generate. Extra satellite channel capacity would be available to other users, such as GT&E. Additional applications were received from some smaller CATV operators requesting permission to construct receive-only earth stations.

Microwave Communications, Inc. (MCI Carriers) and Lockheed Corporation established the MCI Lockheed Satellite Corporation to merge their efforts in the satellite area. The new company proposed two very large capacity satellites (48 transponders each) using, in part, higher 12 GHz frequencies. The higher frequencies, while somewhat unknown technically, would permit downtown, metropolitan area earth stations. MCI Lockheed's proposal called for a multi-purpose, open-access system with particular attention to educational needs. A special report was prepared suggesting various educational uses of satellites including instruction and administration. MCI Lockheed offered five free channels to educational interests, including PBS, for a period of five years. Additional proposals provided for the networds and CATV systems at distance insensitive rates.

RCA Global Communications (RCA Globcom) in combination with RCA Alaska Communications (RCA Alascom), proposed an extensive multi-purpose system, paying special attention to Alaskan communications needs. (RCA Alascom operates long distance common carrier services in Alaska.) Using three satellites with 12-transponder capacity and an extensive earth station network, RCA estimated at least a 50% reduction over present rates. ETC services would be provided at reduced rates, but ITV would have to go at the regular rate, although some standby channels might be generally available at reduced rates. A unique aspect of the RCA system would allow piggy back stereo radio transmission permitting stereo TV and audio networks. After consulting a number of educational groups, RCA devoted special attention to educational needs in Alaska and proposed special ITV services allowing direct satellite reception in small community educational centers. The RCA system would be adequate to serve all users except AT&T.

A western states common carrier, Western Tele-Communications, Inc. (WTCI), proposed a multi-purpose system with its moderate capacity (12, later expanded to 18, transponders) concentrated in the western part of the country. Using North American Rockwell supplied satellites, WTCI would provide TV program distribution at about 40% of the current rate, and it expressed its intention to charge PBS that rate.

Finally, Fairchild Hiller proposed an extremely high capacity system, providing 96 message channels and 24 TV channels, to the United States, Alaska, Hawaii, Puerto Rico and the Canal Zone. Two free channels would be offered to public television full time, and medical TV would get two part-time channels. Some optional ITV possibilities, concentrating mainly on providing services such as direct ITFS to remote Alaska areas, were also vaguely discussed. Fairchild Hiller insisted that it should be granted an exclusive franchise to operate the domestic satellite system, providing large economies of scale and savings.

After having had an opportunity to see the proposals submitted, CPB indicated its uneasiness about them, particularly Comsat's, in a letter to the Commission. The Commission then reemphasized its desire to have specific indications from applicants of what services they would provide to PBS.

The Commission also ordered a private oral presentation by applicants in April, 1971. While the presentations would be placed on the record, they would not be made public until the Docket was terminated.

About this time, the commercial networks indicated a preference for the Comsat, RCA Globcom, and Western Union proposals, perhaps in combination. They also stated that no actions would be taken by them without consultation with public broadcasting.

The National Cable Television Association also expressed an interest in the delivery of ETV programming directly to CATV systems. It indicated that the opportunities for program diversity would be virtually limitless.

The response from the applicants to CPB's request was quite similar to the views expressed in Docket 18316, although there was somewhat less resistance to free channels on the part of some of the applicants. Many of the free offers were on a preemptive basis, however, which was unacceptable to CPB. All applicants indicated their willingness to provide whatever services the Commission ordered.

The positions of the applicants with respect to educational provisions were as follows:

AT&T; no change from terrestrial network situations.

Comsat; opposed to free service since it has to cost someone and is subject to abuse.

Fairchild Hiller; two free, non-interrupted PBS channels, two part-time medical channels, and one free ITV channel serving low-cost terminals.

GT&E; will follow lead of Docket 18316, free services might be on an interrupt-only basis.

Hughes; two free channels on first satellite with option for two more on second; free use of earth station facilities.

MCI Lockheed; five free channels for five years and after that service would be provided at low cost.

RCA; preferred incremental costs and charges; did not want offers to education considered in decision.

TelePrompTer; free access to receive-only stations.

Western Tele-Communications, Inc.; willing to provide channels when financing of actual costs are worked out.

Western Union; either pre-emptive backup free, or incremental cost preferred.

The Phoenix Satellite Corporation, a company jointly owned by the three local network affiliated stations, submitted an application for a receive-only station. This application, which was supported by the network affiliates' associations, represented a prototype for ownership of earth facilities by transmission users. Any local station might joint in the ownership at any time (the local ETV stations declined ownership participation for financial reasons), and any non-owner station may use the facilities after a small one-time basic equipment investment. Two channels were to be provided for each network (including PBS), and one for each independent with each station responsible for providing interconnection from its studies to the earth stations. A key point in this proposal was that it placed program switching under the user's control, rather than through a common carrier.

As a reaction to the views expressed by the applicants, CPB asserted that it viewed free PBS interconnection as a return for the taxpayer's investment in space technology. In response to criticism received, CPB offered a detailed plan of what it considered to be its basic network requirements, omitting additional services such as ITV or a second ETV program channel. In addition to a full time channel for basic network service, PBS suggested a supplemental service for regional programming, special time delays, and program assembly (newsfeeds). A third category, occasional service would be required when necessary for special programming. The total transponder requirement would be two full time and one part time, with 28 transmitting stations and open access to all other earth stations for PBS and National Public Radio (NPR). CPB noted that even with free service, a considerable investment would have to be made in ground facilities. CPB also stated its opinion that the commercial TV networks alone should not be made to bear the cost of free public broadcasting interconnection; since all satellite users have benefited from tax supported technology, all should pay part of this return to the public. CPB also offered the following analysis of the adequacy of the proposals received:

AT&T; unacceptable because of no difference from status quo.

Comsat; services adequate, but terms of service still unclear.

Fairchild Hiller; adequate if commercial networks use use the system.

GT&E; proposal not applicable.

Hughes; not enough channels for supplemental and occasional services, but CATV tie-ins are attractive.

MCI Lockheed; exact use of five channels unclear, only one might be available to PBS.

RCA; adequate with good attention to PBS needs.

TelePrompTer; not applicable.

Western Tele-Communications, Inc.; adequate if commercial systems use its system; has same view about cost burden as CPB.

Western Union; services adequate, but terms of service are not.

CPB strongly endorsed the concept of competition in domestic satellites, and opposed AT&T participation on the grounds that it would minimize benefits.

CPB further indicated a deep concern for being able to meet future, expanded needs, including ITV, and noted that a combination of satellite and cable technology would be necessary.

This view was also taken by the National Citizens Committee for Broadcasting, which expressed a major concern about access to satellite facilities by the public. NCCB also endorsed the original Ford Foundation concept and opposed AT&T participation in any satellite system.

After a long silence, the Ford Foundation reaffirmed its support for its Public Dividend Proposal but noted that groups such as CPB, which didnot exist when this proposal was first made, were now in a better position to advocate public broadcasting interests.

The JCET also expressed its pleasure that educational interests were being considered to some degree, but noted that total educational needs and costs still required examination by the FCC. JCET also mentioned its concern for the 2500 MHz band under consideration in Docket 18294.

A statement by the networks indicated that they considered PBS requirements to be greater than that suggested by CPB. The networks predicted three full time channels and up to six occasional channels. The networks stated once again that no service decisions would be made without full consideration of PBS needs.

The control issue flared up again, with common carriers asserting that only authorized, existing common carriers should be permitted to operate the satellite system. The United States Independent Telephone Association maintained that common carriers alone should be permitted to operate earth stations.

The exclusive system question also received much attention in the period around Spring, 1971. RCA argued that because of its existing Alaska services, it alone should be permitted to serve Alaska. (The government of Alaska indicated that it preferred either the RCA or Comsat proposals, with the Fairchild Hiller system perhaps becoming practical at a later date. Alaska indicated a desire to have low cost, intrastate ITV and ETV supplied by satellite.) Comsat made its strongest pitch for the multi-purpose concept operated by common carriers. Fairchild Hiller, while continuing to support an exclusive system, supported multiple earth station ownership. Fairchild also defended the use of satellite revenues to support public TV as a not undue burden on satellite users. AT&T defended its own system by claiming that none of the other systems met Bell System technical standards.

A dispute also arose about the relationship between AT&T and Comsat. Some comments noted that AT&T's 29% ownership of Comsat constituted a conflict of interest and that S.102 had been introduced in Congress to force common carriers to sell Comsat stock. Both AT&T and Comsat defended their relationship, noting that AT&T only controlled three seats on the Comsat Board of Directors.

The Justice Department entered the dispute to note that AT&T should be required to purchase services from the "least cost supplier". In order to insure a competitive satellite situation, AT&T should not be permitted to carry television programming. The Justice Department indicated that satellite competition was as important as specialized common carrier competitive issues being discussed in Docket 18920.

Comsat had proposed that program suppliers or equipment manufacturers be prohibited from satellite ownership, a view supported by the American Civil Liberties Union. However, the television networks pointed out that this restriction would eliminate all applicants but Comsat.

Western Union urged that the Commission set the standards and rates for public broadcasting services.

Each applicant filed comments attacking various points in the other's applications, and advancing various highly technical and legal arguments.

The National Citizens Committee for Broadcasting filed a comment expressing concern that certain educational and public service potentials of satellites were being ignored in the present proceeding. NCCB urged the Commission not to take any action that would eliminate these possiblities.

NAEB commented that the Commission should keep the Ford Public Dividend Proposal under consideration in making a decision. NAEB also expressed a concern about meeting future, non-ETV needs. Strong support was indicated for open access, common carrier proposals, or situations such as the Phoenix Satellite Corporation. NAEB joined with JCET and CPB/PBS in urging that no commercial use be made of the 2500 MHz band.

The state of Alaska commented that Alaskan ITV, ETV and educational radio survival depends upon free satellite services. Alaska encouraged the use of the 2500 MHz band for direct educational broadcasting to remote areas.

In late September, 1971, the three commercial television networks submitted a detailed plan containing their interconnection needs. The networks also indicated the technical standards to be required of the satellite system operator. The needs of public broadcasting were not included in the network's plan.

At this writing (10/71), the Commission has not yet issued a decision in Docket 16495.

In the Matter of)

An Inquiry Relating to Pre-) Docket No. 18294
paration for a World)
Administrative Radio)
Conference of the Inter-)
national Telecommunications)
Union on Matters Pertaining)
to the Radio Astronomy and)
Space Services.)

Summary

In June and July, 1971, the International Telecommunications Union sponsored a World Administrative Radio Conference on Satellite Telecommunications (WARC-ST) in order to determine appropriate operating frequencies for Communications Satellites. Among the frequencies proposed by the FCC for general satellite use was the 2500 MHz band in which education had an interest due to ITFS.

Major Participants

JCET: Strongly supported exclusive use of the 2500 MHz band for educational satellite uses. Also advocated and defended the 108 FM direct broadcast proposal. Educational satellite needs are great and should be met by adequate reserved frequencies.

NAEB: Strongly supported 2500 MHz proposal, including technical data to support the proposal. Concerned about possible impact of direct broadcast on existing broadcast.

NEA: Supported direct broadcast experiment to determine educational value. Strongly supported 2500 MHz educational reservation.

Department of HEW (Secretary Richardson and Al Horley): Supported the direct broadcast concept and funding experiments in this area. Supported direct radio broadcast proposal as necessary to reach remote areas.

U. S. Office of Education: Urged special attention to educational needs. Educational reservations should be made to meet all educational needs in economically efficient bands.

Lister Hill Center for Biomedical Communications (Ruth M. Davis): Supported use of the 2500 MHz band for educational and medical uses.

CPB: Strongly supported both 2500 MHz and direct FM broadcast proposals. Coordination of satellite services with ITFS would require educational satellite use of that band.

National Academy of Sciences: Proposed 2500 MHz and 108 direct FM concepts. Supported their implementation along with other suggestions.

Alaska Educational Broadcasting Commission: Strongly supported use of satellite broadcasting and other satellite techniques to meet educational needs in remote areas. This view was supported by other educational interests.

Senator Mike Gravel, Alaska
Senator Ted Stevens, Alaska
Governor Rampton, Utah
Federation of Rocky Mountain States, Inc.
Rocky Mountain Corporation for Public Broadcasting

Stanford University, School of Engineering: Major ITFS operator. Educational access to satellites is necessary, but specific reservations in 2500 MHz band may not be best solution.

Dr. John Walker Powell, III, and Dr. Wilbur Schram: Stanford University Professors. Indicated concern about frequencies for educational use of satellite services.

Joseph Becker: President of Educom and Chairman of Conference on Interlibrary Communications and Information Networks. Supported 2500 MHz educational reservation.

Lloyd P. Morris: Local School board member. Opposed any non-educational use of 2500 MHz ITFS frequencies.

NAB: Opposed to direct satellite broadcasting.

Comsat: Urged flexible frequency assignments to permit common carrier satellite operations. Many other potential domestic satellite operators supported similar positions.

In the Matter of)

An Inquiry Relating to Preparation for a World Administrative Radio Conference of the International Telecommunications Union on Matters Pertaining to the Radio Astronomy and Space Services.) Docket No. 18294

The International Telecommunications Union meets regularly in Geneva to handle frequency coordination throughout the world. In June and July, 1971, the ITU sponsored a World Administrative Radio Conference on Satellite Telecommunications (WARC-ST). In order to aid in the formulation of the U. S. position for the Conference, the FCC, operating with the assistance of the Office of Telecommunications Management (OTM)(now Office of Telecommunications Policy) and the Department of State, issued a Notice of Inquiry on August 14, 1968, establishing Docket 18294.

The Notice included a proposed Table of Assignments for the North American continent and the Commission invited comments on them. Many of the proposals were for the still experimental 12 GHz bands.

The WARC-ST was scheduled to assign permanent frequencies for communications satellites and other space services based on experiences with temporary operating frequencies. Problems of interference with terrestrial services and the number of frequencies to be assigned to a specific service were of prime concern. The importance of this conference was that its decisions would more or less fix the utilization and availability of frequency bands for satellite use.

Few early comments were made other than those from major communications users who were concerned with the assignment of adequate frequencies for their services. Data users particularly advocated a reserved channel policy for data transmission services. Comsat, however, noted that new services would require frequency space and advocated a sharing policy to maximize the flexibility of satellite services.

The issues raised by Comsat also concerned the Commission and Second and Third Notices of Inquiry were issued in October and November, 1968. Indicating a general concern for new and special services, the Notices discussed the sharing of frequency bands as a possible solution.

NAEB observed that related problems of frequency redistribution were being considered in Docket 18262 (Land Mobile-UHF sharing). NAEB did express a need for both one-way and two-way satellite communications.

JCET noted a suggestion made by RCA to allocate certain bands for special community services and expressed an interest in the idea. In its proposed Table of Assignments, the Commission had recommended use of the 2500 MHz band for satellite-to-earth (downlink) and earth-to-satellite (uplink) communications. Expressing fear of possible interference to the ITFS services operating in the band, JCET suggested an international reservation of the 2500 MHz band for all kinds of educational satellite telecommunications.

Several manufacturers submitted detailed technical data on the suitability of various frequencies for space service.

Opposition to direct satellite broadcasting was expressed by the National Association of Broadcasters. NAB stated that proposed direct broadcasting in the UHF band should not be permitted until its possible effect on broadcasting could be determined. Similar sentiments were expressed by the CBS affiliates organization.

The Commission issued additional Notices of Inquiry seeking to establish a dialog process. NAEB replied that it was concerned about the possible effects of satellite broadcasting on the existing and growing ETV system. However, NAEB submitted supporting technical studies noting the possible values of satellite relaying. Finally, NAEB supported the concept of reserving the 2500 MHz ITFS band for instructional television.

The FCC's Sixth Notice of Inquiry ordered a series of oral presentations of positions. Among the issues mentioned as being of particular interest was the proposal made by NAEB for instructional use of the 2500 MHz band.

Meanwhile, in written comments, JCET urged support for a series of suggestions made by two National Academy of Sciences (NAS) "summer study" panels. The NAS suggestions included a provision for semi-direct satellite broadcasting to inexpensive, community type earth stations on the 2500 MHz band for educational and community service programs. Another suggestion was a direct FM broadcast frequency at 108 MHz to extend the coverage of Public Radio. The NAS group had also suggested direct satellite broadcasting in the upper part of the UHF-TV band and use of the somewhat experimental 11-12 GHz frequencies for television distribution. JCET strongly urged that the 2500 MHz band be reserved as an educational services band, providing all kinds of communications services in addition to television. JCET particularly mentioned the possible benefits of satellite relay systems for Computer Assisted Instruction (CAI).

The Corporation for Public Broadcasting closely aligned itself with both JCET and NAEB, in the 2500 MHz and 108 FM direct broadcast issues. CPB was interested in the remote origination possibilities that portable earth stations could provide to public broadcasting. CPB also discussed interactive educational possibilities.

Two HEW agencies indicated interest. The Public Health Service's Lister Hill Center for Biomedical Communications expressed an imperative need for the 2500 MHz band to be reserved for education, and the Office of Education stated that there was a need for educational reservations in all services. U.S.O.E. noted that the potential to reduce the costs of distant telecommunications made satellites particularly attractive for information networks, ETV and any other educational services.

NAEB reported on a JCET-sponsored Satellite Seminar held on April 16, 1970. The seminar, attended by a wide range of educational interests, recommended the reservation of an Instructional Communications Service in the 2500 MHz band. Among the reasons offered for using the 2500 MHz band for education were (1) it was already being used for educational purposes, and (2) technical studies indicated that the band could provide education with high performance at a low cost.

This concept was supported by the New York State Education Department, the Communications Workers of America, and the National Education Association. NEA noted several successful educational satellite experiments conducted in India. JCET additionally defended the 108 FM proposal (which had been getting strong criticism because of domestic and international interference problems) as being needed for direct public FM service to rural and remote areas.

The Oral Arguments were held before the Commission on May 19, 1970. CPB President John Macy, Jr. appeared representing his organization and JCET, NAEB, NEA and the Alaska Educational Broadcasting Commission. Macy supported both the 2500 MHz and 108 FM proposals. He stated that the 2500 MHz band was ideal to handle all educational services because (1) it was technically an excellent band, allowing low cost, high efficiency service using easily available equipment, (2) educational satellite use of the band would extend its terrestrial use and permit international educational communications, and (3) the band would be useful for many educational, instructional and public service functions, and could easily be used to allow educational networking. Macy noted that Alaska had special educational communications needs which would have to be met.

Harold Wigren of NEA made a brief appearance to support the points raised by Macy, emphasizing NEA's concern for the 2500 MHz band. NEA proposed an instructional satellite experiment (now planned for 1973 in the Rocky Mountain states) to provide in-service education to teachers in remote areas. Community type reception centers would be used.

The U.S. Office of Education was represented by Timothy Wirth and Lawrence Grayson. Noting that the Public Broadcasting Service network should be completed by 1980, they urged that attention be given to special needs, such as those of Alaska. Strong support was given to making satellites available to all educational services to meet all educational needs. HEW observed that a fiscal limitations problem exists and that any final allocation to education should take this into account.

Dr. Ruth M. Davis of the Lister Hill Center noted that the 2500 MHz band could help solve medical education needs. She reported that the Lister Hill Center had conducted several tests indicating that low-cost satellite techniques would be feasible, particularly in remote areas.

The Seventh Notice of Inquiry on August 12, 1970, devoted considerable attention to the points raised by the various educational interests. Commenting on the proposals derived from the "summer studies" sponsored jointly by NAS, NASA, and the National Research Council, the Commission indicated its opposition to the 108 FM proposal which it considered to be technically infeasible due to almost certain interference to both foreign and domestic existing services. Neither the Commission nor OTM were convinced that the 2500 MHz band should be reserved on an exclusive basis because of a belief that other bands, such as 12 GHz, could serve better for distribution purposes.

Commissioner H. Rex Lee issued a statement commenting that educational needs did not seem to be met sufficiently. He thought that there had not been enough study of a reserved band for educational use in terms of space broadcasting and technical feasibility.

Lloyd P. Morris, an Illinois school board member commenting as an individual, opposed any use of the 2500 MHz band for non-educational uses that might weaken ITFS significantly. He asked that no satellite services be permitted in the 2500 MHz band unless they were educational.

The School of Engineering at Stanford University commented that exclusive educational use of the 2500 MHz band would not be necessary provided educational access to satellites is guaranteed. (Stanford, it should be noted, is a major ITFS system operator.) However, two Stanford professors, Drs. John Walker Powell, III, and Wilbur Schram, noted the various educational potentials of satellites and indicated a concern for educational frequencies.

Despite the Commission's comments in the Seventh Notice, CPB still felt that the 108 FM proposal was technically sound. However, CPB stated that it considered the reservation of 2500 MHz more important to permit the interconnection of additional non-commercial stations to provide communities with more than one ETV channel. CPB expressed its belief that interference between ITFS systems and satellite uplinks would seriously damage ITFS unless educational interests could control and coordinate both services. CPB also emphasized the potentials of combining cable and satellite technology.

HEW Secretary Richardson, along with Al Horley, stated that HEW would provide support to experiments to test direct satellite FM and TV broadcasting. HEW asserted that direct radio broadcasting was very important to help meet the great need for educational services and that it would be technically feasible. However, HEW thought the direct satellite TV broadcasting should only be in the UHF band to avoid serious interference problems.

JCET supported the HEW conclusions and stated that, with time for additional development of satellite broadcasting techniques, the 108 FM direct broadcast might be possible without interference. JCET acknowledged international opposition to the concept, but expressed hope that a way could be found to serve rural areas. JCET claimed that various uses of the 2500 MHz band would be feasible without destroying the ITFS band. Satellites would eventually aid ITFS by providing interconnection services.

NAEB supported HEW and JCET, adding that the Satellite Communication Subdivision of the Electronic Industries Association had indicated support for direct FM broadcasting. NAEB observed that there was support for reservation of the 2500 MHz band from public broadcasters, some Congressmen, and certain states. Much of this support came from sparsely settled western states.

Finally, Joseph Becker of Educom, reported the support for the 2500 MHz proposal by the Conference on Interlibrary Communications and Information Networks.

A Report and Order on December 18, 1970, indicated the official U.S. position for the WARC-ST. Although many other frequencies were discussed for a variety of services, the Commission recommended that the 2500 MHz band should be shared, permitting use for any kind of educational communications, but not limited exclusively to education. FM direct broadcast would be permitted between 88 and 100 MHz (which includes the Educational FM band) only if other nations were to agree, a situation which the Commission considered quite unlikely.

The results of the Conference, announced on July 19, 1971, limited the 2500 MHz band in North America to community type (not direct home broadcast) reception, subject to the approval of affected operators of existing services. Some special applications might be permitted on a regional basis.

It is interesting to note that of the applicants to operate a domestic satellite system (Docket 16495), only one company, Fairchild Hiller, proposed any satellite operations in the 2500 MHz band.

Educational Implications

Docket 16495

Because the operation of domestic communications satellite service promises vast, low-cost communications service on a natural, regional, and international basis, it is a significant medium for education. However, the number of separate satellite systems that may be authorized at this time is limited by current technology. Consequently, it is necessary to resolve the questions of (1) who will operate any domestic satellite system, (2) what will its relationship be to the existing telecommunications systems, (3) should competition be permitted in domestic satellite systems, and what is the role of educational broadcasting in such systems.

The Ford Foundation originated the concept of a domestic satellite system for television network transmission, using any derived income to help finance educational television. Eventually nine (9) commercial companies made specific applications to the FCC for permission to operate domestic satellite systems.

Based upon requests from educational groups, the Commission required each commercial applicant to specify the benefits that its system would provide to education. Some of the applicants offered a variety of free services, while others offered no more than the promise of low cost communications services to all potential users, including education. Much of the service discussions centered around educational television service, but satellites offer many thousands of narrow bandwidth channels for each television transmission channel, so both television and voice/ data service could be accommodated by a single satellite.

Satellites can also offer particular educational services to remote areas since, under certain circumstances, satellite transmissions may be received in either the home or in community reception centers, such as schools. Other proposals would permit local communities to transmit to satellite systems providing low cost, national educational information networks. Therefore, the eventual resolution of how many satellites and their respective communication channels shall become operational, shall affect the availability and cost of these channels to the educational community.

Docket 18294

The educational interest in this docket was concentrated on the proposed use of the 2500 MHz band for a number of uses, both educational and non-educational. Educational interests feared that non-educational use of this band might cause interference to the ITFS band and urged that the entire band be reserved for educational satellite use.

Among the desired uses of the band would be data and information transmission. Educational control of the entire frequency band would assure coordination of all services using the band.

The conference finally decided that educational interests would have access to the band, but not on an exclusive basis. However, the primary concern of educational access to satellite frequencies was assured.